

**An examination of the relationships between  
patterns of attachment, self-esteem, social  
problem-solving and drinking behaviour in  
problem drinkers**

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### **Author's Declaration**

I declare that this thesis is my own work carried out under normal terms of supervision.

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31 January 2011

### **Declaration**

I composed this thesis; the work is my own. No part of this thesis has been submitted for any other degree or qualification.

Name.

Date.....*Chester*.....*9 June 2011*.....

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## List of Contents

Author's Declaration	2
Acknowledgements	3
List of Contents	4
List of Tables	7
List of Figures	8
List of Appendices	9
Abstract	10
1. Aims and Overview	11
2. Introduction	12
2.1. Attachment Theory	13
2.2. Attachment Assessment	15
2.3. The Effects of Early Attachment Relationships	16
2.4. Early Family Environments, Attachment Style and Alcohol Problems	17
2.5. Parental Bonding	18
2.6. The Effects of Parental Bonding on Alcohol Problems	18
2.7. The Effects of Absent Parents	21
2.8. Emotion Regulation and Alcohol: The Role of Problem Solving	23
2.9. Social Problem Solving and Self-Esteem in Coping and Social Skills Training	25
2.10. Social Problem Solving in an Alcohol-related Context	26
2.11. Self-esteem in an Alcohol-related Context	28
2.12. Age of Drinking Onset	30
2.13. Neuropsychological Effects of Alcohol	31
2.14. Summary and Conclusions	33
3. Hypotheses	34
3.1.1. Relationships between Parental Bonding and Alcohol Problems	34
3.1.2. Relationships between Social Problem Solving and Alcohol Problems	35
3.1.3. Self-Esteem as Mediating Variable	37
3.1.4. Further Exploration of the Data	37
4. Method	39
4.1. Ethical Approval and Informed Consent	39
4.1.1. Participant Information Sheet	39
4.1.2. Consent Form	39
4.1.3. Confidentiality and Anonymity	40
4.2. Participants	40
4.2.1. The Setting: The Inpatient Treatment Unit	40
4.2.2. Inclusion and Exclusion Criteria	41



4.2.3.	Demographic Characteristics	42
4.3.	Design	43
4.4.	A Priori Power Calculation	43
4.5.	Measures	44
4.6.	Independent Variables	45
4.6.1.	Parental Bonding Instrument (PBI)	45
4.6.2.	Social Problem Solving Inventory (Revised) (SPSI-R:S)	45
4.6.3.	The Self-Liking/Competence Scale (Revised) (SLCS-R)	46
4.7.	Dependent Variables	47
4.7.1.	Timeline Followback (TLFB) (modified)	47
4.7.2.	Alcohol Use Disorders Identification Test (AUDIT)	47
4.7.3.	Alcohol Problems Questionnaire (APQ)	48
4.7.4.	Drinking History	49
4.8.	Additional Information	49
4.9.	Procedure	49
4.10.	Data Entry and Analysis	50
4.10.1.	Missing Data	51
5.	Results	52
5.1.	Participation in the Study	52
5.2.	Testing for Normal Distribution of the Data	52
5.3.	Descriptive Statistics for the Sample	55
5.4.	Descriptive Statistics and Comparison with Normative Data	56
5.5.	Correlational Analysis	57
5.5.1.	Correlations between Independent Variables and Dependent Variables	58
5.5.2.	Correlations between Independent Variables and Mediating Variables	60
5.5.3.	Correlations between Mediating Variables and Dependent Variables	62
5.6.	Building Models	62
5.6.1.	Dependent Variables: Alcohol Consumption and Alcohol Problems	62
5.6.2.	Mediating Variables: SLCS-R	63
5.6.3.	Independent Variables: PBI and the Resulting Models Involving PBI	63
5.6.4.	Independent Variables: SPSI-R:S and the Resulting Models Involving SPSI-R:S	64
5.7.	Model Testing - Regression Analyses	67
5.7.1.	Reverse Causal Effects	70
5.8.	Family History of Alcoholism	70
5.9.	Age of Drinking Onset	71

5.10.	Summary of the Main Results	73
6.	Discussion	74
6.1.	Participation in the Study	74
6.2.	Demographics	74
6.3.	Alcohol Consumption	75
6.4.	The Relationship between Parental Bonding and Alcohol-related Problems	76
6.5.	The Relationship between Social Problem Solving and Alcohol-related Problems	77
6.6.	The Mediating Role of Self Esteem in the Relationship between Parental Bonding and Social Problem Solving	77
6.7.	A Possible Model based on Current Data	79
6.8.	Family History of Alcoholism	81
6.9.	Parental Bonding, Social Problem Solving and Alcohol Consumption	81
6.10.	Absent Parents	82
6.11.	6-day and 12-day Treatment Programme	83
6.12.	Gender-based Prevalence Rates	84
6.13.	Comparison with Normative Data on SPSI-R:S, PBI and SLCS-R	85
6.14.	Age of Drinking Onset	86
6.15.	Methodological Considerations and their Impact on Research Findings	86
6.15.1.	Parental Alcoholism	87
6.15.2.	Co-morbidity and the Absence of Measures of Co-Morbidity	87
6.15.3.	Absent Parents	88
6.15.4.	Correlational Design and Comparison Group	89
6.15.5.	Social Desirability	89
6.15.6.	Issues around Self-Report and Subjective Measurements	90
6.15.7.	Difficulties with Questionnaire Completion	91
6.15.8.	Self-Esteem Definition and Measurement	92
6.15.9.	Assessment of Alcohol Problems	92
6.15.10.	Two Treatment Programmes – One Sample	93
6.16.	Clinical Implications	93
6.17.	Future Research	97
6.18.	Summary of Main Findings and Conclusions	98
7.	References	99
	Appendices	119

Words: 29492

## List of Tables

Table 1. Study Participation Rate _____	52
Table 2. Descriptive Measures, Kolmogorov-Smirnov-Z-values (K-S-Z) and associated p-values for Independent and Mediating Variables _____	53
Table 3. Descriptive Measures, Kolmogorov-Smirnov-Z-values (K-S-Z) and associated p-values for Dependent Variables _____	55
Table 4. Descriptive Statistics for the 6-day programme (n=58) and 12-day programme (n=32) _____	56
Table 5. Correlations between PBI subscales and Alcohol Problems, n=83 _____	59
Table 6. Correlations between SPSI-R:S subscales and Alcohol Problems, n=82 _____	59
Table 7. Correlations between PBI subscales and Alcohol Consumption, n=83 _____	60
Table 8. Correlations between SPSI-R:S subscales and Alcohol Consumption, n=83 _____	60
Table 9. Pearson's Correlations between PBI subscales and SLCS-R subscales, n=85 _____	61
Table 10. Correlations between SPSI-R:S subscales and SLCS-R subscales, n=84 _____	61
Table 11. Correlations between SLCS-R subscales and Alcohol Problems, n=88 _____	62
Table 12. Correlations between the Variables of Model 1 _____	63
Table 13. Correlations between the Variables of Model 2 _____	64
Table 14. Correlations between the Variables of Model 3 _____	65
Table 15. Correlations between the Variables of Model 4 _____	66
Table 16. Correlations between the Variables of Model 5 _____	66
Table 17. Group Means for Independent Variables for Participants' Parents with (n=37) and without Alcohol Problems (n=53) _____	71
Table 18. Means (and SD) for APQ Common by Age when Participant was first intoxicated _____	72

## List of Figures

Figure 1. 1 <sup>st</sup> Model showing the pathways between Maternal Care (PBI), Self-Competence (SLCS-R) and APQ Common	63
Figure 2. 2 <sup>nd</sup> Model showing the pathways between Social Problem Solving (SPSI-R:S), Self-Competence (SLCS-R) and APQ Common	64
Figure 3. 3 <sup>rd</sup> Model showing the pathways between Negative Problem Orientation (SPSI-R:S), Self-Competence (SLCS-R) and APQ Common	65
Figure 4. 4 <sup>th</sup> Model showing the pathways between Social Problem Solving (SPSI-R:S), Self-Liking (SLCS-R) and Audit	65
Figure 5. 5 <sup>th</sup> Model showing the pathways between Negative Problem Orientation (SPSI-R:S), Self-Liking (SLCS-R) and Audit	66
Figure 6. Standardised $\beta$ coefficients of the pathways between Maternal Care, Self-Competence and APQ Common, * $p < 0.05$ , ** $p < 0.01$ , ns=not significant	67
Figure 7. Standardised $\beta$ coefficients of the pathways between Social Problem Solving, Self-Competence and APQ Common, * $p < 0.05$ , ** $p < 0.01$ , ns=not significant	68
Figure 8. Standardised $\beta$ coefficients of the pathways between Negative Problem Orientation, Self-Competence and APQ Common, * $p < 0.05$ , ** $p < 0.01$ , ns=not significant	68
Figure 9. Standardised $\beta$ coefficients of the pathways between Social Problem Solving, Self-Liking and Audit, * $p < 0.05$ , ** $p < 0.01$ , ns=not significant	69
Figure 10. Standardised $\beta$ coefficients of the pathways between Negative Problem Orientation, Self-Liking and Audit, * $p < 0.05$ , ** $p < 0.01$ , ns=not significant	69
Figure 11. Boxplot Means for APQ <i>Common</i> by <i>Age</i> when participant was first intoxicated	72
Figure 12. Proposed Model Based on the Current Data	80

## List of Appendices

Appendix A: List of Hypotheses - Mediated Relationships	119
Appendix B: Materials relating to Ethical Approval	124
B.1. Letters showing Ethical Approval	124
B.2. Participant Information Sheet	131
B.3. Consent Form	133
Appendix C: Demographic Information	134
Table C.1. Summary of Participants' Drinking History	134
Appendix D: Questionnaires	135
D.1. PBI	135
D.2. SPSI-R:S Response Sheet for John Smith (taken from SPSI-R:S Manual [D'Zurilla, Nezu, & Maydeu-Olivares, 2002].)	137
D.3. SLCS-R	138
D.4. Timeline Followback Drinking Diary and Drinking History	139
D.5. Audit	142
D.6. APQ	143
D.7. Demographic Proforma	144
Appendix E: Data Distribution of <i>Frequency</i> and APQ Domains	146
Appendix F: Comparison of Descriptive Data with Normative Data	149
Table F1. Summary of Descriptive Statistics PBI and Normative Data for the PBI	149
Table F2. Post hoc Comparisons between Current Alcohol-dependent Group and Anorexic Inpatients and Undergraduate Students on PBI	149
Table F3. Summary of Descriptive Statistics SPSI-R:S and Normative Data for the SPSI-R:S	150
Table F4. Post hoc Comparisons between Current Alcohol-dependent Group and Male Prisoners and Male Students on Social Problem Solving (SPSI-R:S)	150
Table F5. Summary of Descriptive Statistics SLCS-R and Normative Data for the SLCS-R	151
Table F6. Post hoc Comparisons between Current Alcohol-dependent Group and Anorexic Inpatients and Undergraduate Students on SLCS-R	151
Table F7. Summary of Descriptive Statistics APQ and Normative Data for the APQ	151
Table F8. Summary of Descriptive Statistics Alcohol Consumption and Normative Data for Alcohol Consumption	152

## 2. Introduction

Naturally occurring, mind altering substances have been used for centuries by different cultures. For example, Hippocrates recommended opium for different diseases, South American Indians chewed coca leaves and the Egyptians made wine and beer. The widespread availability and frequent use of various drugs sets the stage for potential abuse. Substance abuse and substance dependence make up the major category of Substance-related Disorders in the Diagnostic and Statistical Manual by the American Psychiatric Association (DSM IV: APA, 1994). Substance abuse is defined as a person using the drug to such an extent that he or she is often intoxicated during the day and fails in important obligations and in attempts to abstain but has no physiological dependence. Substance dependence is the more severe abuse of a drug accompanied by physiological dependence which is made evident by tolerance and withdrawal symptoms (APA, 1994). The outcome of a large epidemiological study in the U.S. highlighted that incidence rates of substance disorders were comparable to those of cardiovascular disease, stroke and lung cancer (Grant *et al.*, 2009).

Alcohol-related problems include drunken driving, crime and anti-social alcohol induced behaviours, hangovers, harmful physical and psychological effects of chronic consumption and damage to the unborn child. Alcohol has been named as the third leading risk factor for ill health in developed countries accounting for 2.5 million deaths worldwide (3.8% of total deaths) (WHO, n.d.). Around 5 per cent of deaths in Scotland can be attributed to alcohol, the causes ranging from road accidents to cancer (Scottish Government, n.d.). Research has shown that high percentages of patients reporting to outpatients or emergency departments, drink unhealthy amounts of alcohol, e.g. 7 to 20 per cent of outpatients (Fiellin *et al.*, 2000), 30 to 40 per cent of patients reporting to emergency departments and 50 per cent of trauma patients (D'Onofrio *et al.*, 1998).

The Scottish Government (n.d.) describes Scotland's drink problem to be worse than that of the rest of the UK. In Scotland, 50 per cent of men and 30 per cent of women regularly consume more alcohol than recommended by the guidelines. For the last 30 years the alcohol consumption in Scotland has increased by 19 per cent. The cost of alcohol misuse to society is estimated at between £2.48 billion and £4.64 billion every year. This equates to £900 for every adult per year in Scotland. Furthermore, the Government estimate that 65,000 children in Scotland live with a parent with alcohol problems and that alcohol played a role in one third of divorces (Scottish Government, n.d.).

Over the last decades significant advances have been made in identifying risk factors for drug and alcohol abuse and dependence; in particular neurobiological and psychological



## Abstract

Introduction. Early psychological and environmental factors appear to play an important role in the development of alcohol abuse and alcohol dependence and increasing self-esteem and problem-solving abilities is often the aim of psychological interventions for these problems. The purpose of this study was to examine parental bonding, self-esteem and problem solving in alcohol-dependent individuals, using multi-dimensional measures.

Method. An inpatient sample from a specialist treatment facility consisting of 90 volunteers who completed questionnaires focusing on alcohol consumption (*Timeline Followback*), alcohol-related problems (*Alcohol Problems Questionnaire*), self-esteem (*The Self-Liking/Competence Scale [Revised]*), social problem solving (*Social Problem Solving Inventory [Revised]*) and perceived parenting (*Parental Bonding Instrument*). Inclusion/exclusion criteria were applied. The data were analysed using Pearson Correlations and Stepwise Regression.

Results. Alcohol problems were related to maternal parenting patterns but not paternal parenting patterns. A significant negative relationship was found between social problem solving and alcohol problems; a positive significant relationship was found between alcohol problems and the dysfunctional styles of social problem solving (*Negative Problem Orientation, Impulsivity/Carelessness Style, Avoidance Style*). Both aspects of self-esteem were significantly related to parental care, social problem solving and alcohol-related problems. The hypothesised role of self-esteem as a mediator between *Maternal Care* and alcohol problems, and between social problem solving and alcohol problems, was not supported.

Conclusions. In problem drinkers, dysfunctional aspects of problem solving and low maternal bonding during childhood and adolescence appear to be related to their alcohol problems. Although a role for self-esteem in the development and maintenance of alcohol problems has been identified, the precise mechanisms through which self-esteem, problem solving and parental bonding are connected with alcohol problems have yet to be established. However, self-esteem and social problem solving need to be considered as important factors when planning treatment options. In addition, the negative effects of drinking alcohol at an early age on problems later in life were discussed.

## **1. Aims and Overview**

The principal aim of this study is to investigate the relationship between developmental, cognitive and behavioural factors and alcohol-related problems and alcohol consumption using measures of self-esteem, patterns of received parenting and social problem solving within a clinical population of problem drinkers. No study to date has used the chosen measures in conjunction.

Additionally, the study aims to investigate if self-esteem acts as a mediator between aspects of parental bonding and alcohol problems and between aspects of social problem solving and alcohol problems.

As this study is of an exploratory nature, other aspects in relation to problem drinking will be explored, such as the relationship of the above variables with alcohol consumption, and the relationship between the age of drinking onset and alcohol problems.

The introductory chapter provides a literature overview which summarises previous research that has been carried out investigating the roles of parental bonding, self-esteem and social problem solving in the development of alcohol problems, and identifies current gaps in literature and research.

The current study employed a quantitative methodology, using reliable and validated questionnaires; the Parental Bonding Instrument (PBI) to assess parental styles retrospectively as perceived by the child; the Social Problem Solving Inventory (Revised) (SPSI-R:S) to assess the individual's ability to solve everyday problems; the Self-Liking/Competence Scale (Revised) (SLCS-R) to measure the individual's self-esteem and the Alcohol Problem Questionnaire (APQ) and the Alcohol Use Disorders Identification Test (Audit) to assess the extent of an individual's alcohol problems.

All participants attended an inpatient unit for treatment of alcohol problems, are heavy drinkers and had previously scored highly on the Audit.

Correlational analyses were carried out first to assess the relationships between the relevant variables. Where applicable, it was then tested if self-esteem mediated the relationships between aspects of parental bonding and alcohol problems and between aspects of social problem solving and alcohol problems using a series of regression analyses. Further exploratory analyses were carried out.

The second part of this thesis presents the results and discusses their significance in relation to previous research findings. Furthermore, limitations of the study are discussed and future research ideas and implications of the results are presented.



explanations have made important contributions to our understanding of the relevant issues. Previous research has focussed on biological and genetic theories of alcohol dependence and investigated abstinence and pharmacological approaches to treatment. However, research over the last 50 years has shown that Jellinek's Disease Model of Alcohol Addiction (1952) is not consistent with contemporary findings and theories of drug dependence. Although the aetiology of alcohol and drug dependence is still not clear, it is apparent that a combination of genetic, neurobiological, developmental, psychological, social and environmental factors contributes to its development.

Alcohol dependence is known to be a heterogeneous disorder (Patkar & Li, 2010) and various contributing factors have been identified and a range of therapy approaches has been developed. However, relapse rates for alcohol dependence are chronic as the long-term effectiveness of current treatments is limited (Jupp & Lawrence, 2010). In the past treatments often focussed on either physiological or psychological treatments. More recent advances in healthcare have emphasised an integrated or holistic treatment approach which takes the whole person into consideration and offers physiological and psychological treatments. Studies like Project MATCH (1997), UKATT (2008) or COMBINE (2003) have been looking for the most effective pharmacological or psychological therapies, and have also started combining both methods in an effort to find the most effective treatments.

Although still poorly studied, early psychological and environmental factors appear to play an important role in the development of alcohol abuse and dependence. It is thought that improving one's adaptive coping skills leads to a better management of stressful or 'high-risk' situations, where alcohol-dependent individuals appear more likely to relapse. Increasing self-esteem and problem-solving abilities have therefore often been the aim of psychological interventions for alcohol dependence. Early parental attachment patterns have been connected with adult self-esteem and social problem solving skills. It is this combination of early attachment patterns, self-esteem and social problem solving in alcohol-dependent individuals that this study turns to. There will be a brief introduction to the relevant psychological theories underlying these concepts before previous research of parental bonding, self-esteem and social problem solving in relation to alcohol use will be reviewed.

## 2.1. Attachment Theory

Harlow's experiments in the 1950's with monkeys implied that the instruction, affection and imitation which a child receives in their relationship with their primary caregiver are

essential for mental and social development (Harlow & Harlow, 1969). Bowlby developed the theoretical concept of attachment, which has its roots in psychodynamic concepts. Attachment stresses that the relationship between a child and the child's primary caretaker is crucial to the child's development (Bowlby, 1969, 1982, 1991). Close proximity to an attachment figure in times of danger protects the infant from harm and therefore increases its chances for survival (Bowlby, 1969). The caregiver's attention is attracted through behaviours such as crying or smiling (Crittenden & Ainsworth, 1989). The quality of the attachment depends on the promptness and appropriateness in the adult's response to the child's behaviours. The mother's sensitivity and responsiveness are viewed as key determinants of an attachment relationship, which are important for the child's development (Raskin *et al.*, 1971; Schaefer, 1965).

Attachment behaviour is therefore organised as a result of the way the caregiver has responded to the child. Patterns of attachment can broadly be classed into 'secure' and 'insecure' attachment behaviours (Ainsworth *et al.*, 1978).

In a secure attachment pattern, the child seeks and receives protection, comfort and reassurance when distressed. This allows the child to explore confidently as support from the caregiver is on hand when required. Insecure patterns on the other hand (avoidant, ambivalent, disorganized) leave the child 'insecure' or anxious about the availability of help in the face of problems. Such patterns develop through inconsistent caregiving, rejection or even threats on the child's safety from the caregiver. The child's response to those situations is adaptive and strategic as it fits in with and complements the caregiver's behaviour (Crowell & Treboux, 1995).

Patterns of attachment have been found to be stable across time in general population samples (Main & Cassidy, 1988). Continuity of parental care contributes to the stability of attachment patterns (Bretherton, 1985). Bowlby (1969) hypothesised that a change in attachment pattern can occur as a result of the influence of a new relationship and of the new reflection and interpretation that this relationship can bring to the meaning of present experiences and past events. This is of particular importance as it has implications for clinical interventions in attachment problems.

More recent developments in attachment theory have turned to the internal representations of attachment. Bowlby (1969) proposed that, in addition to affecting behaviour, the way in which parents respond to their child's need for comfort also shapes the child's inner world, even into adulthood. An unresponsive primary caregiver is thought to cause developmental disruption in the child. A child needs the dyadic and reciprocal relationship with their

caregiver to help them regulate and recognise their own affective states. This is done by parental affect mirroring (Gergely & Watson, 1996). The caregiver mirrors the child's emotions and behaviours so the child can learn about their own mental states in interaction with their social environment. During the first year of life, the child starts being able to 'mentalise' by recognising mental states and understanding the relationship between emotion and behaviour. This capacity to 'read' other people's feelings, intentions and attitudes is crucial for interpersonal functioning as it makes other people's behaviour predictable and meaningful (Fonagy *et al.*, 1998). Pretend play helps the child to integrate their inner and outer realities so they learn to differentiate between their own thoughts and feelings and those of others (Fonagy & Target, 1996).

Reflective functioning refers to an individual's narrative ability to reflect on their own and others' intentional states (Fonagy *et al.*, 2004). It has also been portrayed as the operationalisation of mentalisation. Reflective functioning develops within a secure attachment relationship (Fonagy *et al.*, 2004). It serves a number of purposes. Firstly, it makes behaviour of others predictable and meaningful to the child. Furthermore, it supports and maintains attachment security and helps the child distinguish between appearance and reality (Fonagy *et al.*, 1998). These processes are crucial for emotional regulation and interpersonal functioning. Low mentalisation capacity has been connected with higher vulnerability to psychopathology. Reflective functioning and mental health are therefore closely related.

## 2.2. Attachment Assessment

The 'strange situation' procedure, which was developed by Ainsworth and colleagues, is a standardised assessment of attachment in young children but it is of limited clinical use. However, there is no other assessment method that is generally accepted to assess attachment in young children (Newman & Mares, 2007). In the 'strange situation' protocol, a mother (or caregiver) and child are separated and reunited twice across eight episodes (Ainsworth *et al.*, 1974). Children can be placed in one of four categories, according to the behaviour they displayed when they were reunited with their mothers. Those categories are: (1) Secure Attachment (2) Avoidant Attachment (3) Ambivalent Attachment (4) Disorganised Attachment.

Furthermore, direct observation of the young child's behaviour is recommended by most authors (e.g. Boris *et al.* 2004; Boris & Zeanah, 2005; Newman & Mares, 2007; Stafford &

Zeanah, 2006), as well as structured interviews and detailed reports from caregivers. Story-based approaches such as Attachment Story Completion Test (Bretherton, 1990) have been used to assess attachment styles in children.

Interviews, q-sort assessments, and questionnaires are the three general types of measures of attachment in adults. Attachment in adults is commonly measured using the Adult Attachment Interview (George *et al.*, 1996). Other interviews are the Attachment Interviews (Bartholomew & Horowitz, 1991) and the Current Relationship Interview (CRI) (Crowell, 1990). The Q-sort is an alternative method of scoring the Adult Attachment Interview, e.g. Adult Attachment Q-sort (Kobak, 1989). Questionnaires have been used to assess various adult attachment styles, for example the Adult Attachment Styles (AAS) (Hazan & Shaver, 1987) or the Reciprocal Attachment Questionnaire (West *et al.*, 1987).

Other attachment measures retrospectively assess the early attachment relationship with caregivers, which means they can be used with adults or older adolescents. An example of such a self-report questionnaire is the Parental Bonding Inventory (PBI) (Parker *et al.*, 1979). The PBI assesses parental style, as perceived by the offspring for the first 16 years of their life, by measuring the dimensions of 'Care' and 'Protection'. This self-report measure was chosen for its psychometric properties and its ease of use to retrospectively assess the quality of the relationship with caregivers in the alcohol-dependent participants of this study.

### 2.3. The Effects of Early Attachment Relationships

Research with maltreated children has shown that the quality of a child's attachment predicts adjustment in social, psychological, behavioural, and cognitive domains (e.g. Cicchetti & Toth, 1998; Oppenheim *et al.*; Wakschlag & Hans, 1999). Evidence has suggested that abused children are more likely to have a mistrust of others, devalued sense of self, hostility, a tendency toward negative attribution bias, as well as a wariness of close relationships (Price & Glad, 2003). In addition, those children have representations of self and others that are similar to the dysfunctional relationships they have experienced with their parents (Cicchetti & Lynch, 1995).

Research has also shown an effect of maltreatment on children's attachment patterns; maltreated children are more likely to show disoriented or disorganised attachment patterns. They demonstrated a lack of an organised strategy to deal with stress and emotional regulation (Main & Solomon, 1986). A review of 13 studies examining the quality of attachment in maltreated infants found that significantly more maltreated infants showed



insecure attachment patterns compared to controls in 11 of the studies (Morton & Browne, 1998). Another study analysed data from 43 mother-infant pairs, half of them from families on child protection registers for child maltreatment, the other half demographically matched (Carlson *et al.*, 1989). Carlson *et al.* (1989) found that over 80% of the children on the child protection register met criteria for disorganised and disoriented attachment relationships. Disorganised attachment styles in early childhood often lead to conduct problems and delinquent behaviours in older children (Newman & Mares, 2007).

Research has also supported the converse in that secure parental attachment leads to positive representations of the self, which includes high levels of self-esteem and self-efficacy (Rangarajan, 2008; Thompson, 1999). So if a caregiver responds to a child's distress promptly and sensitively, this has an effect on the child's evaluation of the self. The child is likely to feel worthy of attention and affection and this leads to high self-esteem and self-efficacy. Furthermore, investigations with children of alcoholic parents have also shown the detrimental effect that parental alcoholism can have on the development of self-esteem (Rangarajan, 2008). If a parent is preoccupied with the problems caused by their own or their partner's alcohol dependency, they are less likely to be emotionally and physically available to attend to their child's needs, which may lead to insecure attachment patterns. Ultimately this affects self-esteem and self-efficacy in the child. Research has supported the notion that paternal (but not maternal) alcoholism had detrimental effects on maternal and paternal attachment patterns in their offspring (Rangarajan, 2008).

#### **2.4. Early Family Environments, Attachment Style and Alcohol Problems**

As already described, unstable early family environments appear to be connected to later psychopathology. Their role in the development of alcohol problems has also been suggested (Bernadi *et al.*, 1989). Early research by Vaillant (1983) has shown that people with alcohol problems are less likely to come from cohesive families and are less likely to have close relationships with their fathers. In addition, exposure to alcoholism in the family environment or a family history of alcoholism also contributes to development of later alcohol problems. Recent studies have shown that an insecure attachment style is prevalent in people with alcohol problems (De Rick & Vanheule, 2007). The research found overprotective mothering to be associated with insecure attachment patterns. In addition, insecurely attached patients were shown to have more severe psychiatric and emotional problems than securely attached patients (De Rick & Vanheule, 2007). Doumas *et al.* (2007) also showed that patients with a preoccupied or fearful attachment style were over-

represented in a sample of alcohol and drug-dependent patients. In addition, these patients reported more interpersonal difficulties and higher levels of depression and anxiety than patients with a dismissing or secure attachment styles.

## 2.5. Parental Bonding

The term 'parental bonding' is often synonymously used with the term 'attachment' (Turner, Wittkowski & Hare, 2008). However, 'attachment' describes the relationship between caregiver and child whereas 'parental bonding' is the perception of that relationship by one of the involved parties. In the case of the Parental Bonding Instrument (PBI) (Parker *et al.*, 1979), the chosen measure of this study, parental bonding is retrospectively assessed for the first 16 years of the child's life from the viewpoint of the child. Two factors 'Care' and 'Protection' have emerged from factor analytic studies using the PBI (Parker *et al.*, 1979; Raskin *et al.*, 1971). The factor *Care* relates to parents' emotional warmth/coldness and closeness/rejection. The second factor, *Protection*, relates to parents' support for the child's autonomy or their psychological control of the child. The optimal parenting style has been described as consisting of high care and low control, where the child receives warmth and affection from the parents and is allowed to develop autonomy. Furthermore, parental promotion of individuality and connectedness leads to optimal identity development during adolescence (Grotevant & Cooper, 1983). The parenting style of '*affectionless control*', consisting of low care and high control has been associated with later psychological problems (Parker *et al.*, 1979). A relationship between poor parenting and high levels of distress was found in a range of populations, including depression (Pederson, 1994), anxiety (Chambers *et al.*, 2004) and eating disorders (Swanson *et al.*, 2010).

The following section will present the research that has been carried out using the PBI in an alcohol-related context in order to draw conclusions about the effects of early parenting influences on alcohol consumption and problems.

## 2.6. The Effects of Parental Bonding on Alcohol Problems

The Parental Bonding Instrument (PBI) has been used by some studies to explore the effect of early parenting influences on adult outcomes. Most did not focus on the effect of parental bonding on later alcohol consumption or alcohol problems but investigated the effect on adult psychopathology. Other studies used alcohol-dependent or drug-dependent samples

and compared their results to non-dependent samples to draw conclusions about the effect of early parenting influences.

An early study by Gomez (1984) showed that the absence of a satisfactory paternal relationship was common in an alcohol-dependent group. Significantly more fathers had been absent in the alcohol-dependent group (compared to a control and an eating disordered group). Fathers were seen as deficient in their caring. Joyce *et al.* (1994) have also shown that alcohol-dependent groups perceived their parents as low in care. Additionally the participants had rated their parents as high in control. Bernardi *et al.* (1989) found that maternal and paternal overprotection was reported by drug users, whereas only maternal overprotection was reported by alcohol-dependent participants.

Marchiori *et al.* (1999) could not find significant differences in the care and control that alcohol-dependent patients and non-alcohol dependent patients had received. Their study was carried out to validate a new scale to measure emotional dependence.

The main body of evidence comes from three large scale studies. Kendler *et al.* (2000) used the data of the Virginia Twin Registry to assess the risk for various disorders among female twins. The most recent study by Young-Wolf *et al.* (2011) published the data for males from the same twin study. However, they specifically focused on the relationship between childhood maltreatment and alcohol-use disorders. Data from another large study, the US National Comorbidity Survey, was used by Enns *et al.* (2002) to look at the effect of parental bonding on life time history of common mental disorders. All three studies used an abbreviated version of the PBI to assess parental bonding. Two earlier investigations had established a three factor structure in the PBI (Cox *et al.*, 2000; Kendler, 1996). Cox *et al.* (2000) named the factors: care, overprotection and authoritarianism. Kendler (1996) called them: coldness, protectiveness and authoritarianism.

Kendler *et al.* (2000) found that high levels of authoritarianism and coldness were associated with an increased risk for all assessed disorders. Enns *et al.* (2002) established that a lack of care was most consistently associated with psychopathology but that this was diagnostically non-specific.

Young-Wolf *et al.* (2011) found that children who had experienced maltreatment were 1.74 times more likely to experience subsequent alcohol abuse and/or dependence. The PBI, however, was used to control the influence of parenting style on the association of childhood maltreatment and alcoholism. The association between maltreatment and alcoholism was found to be indirect as it was reduced when parenting style was controlled for. This suggests that parenting style plays a role in the development of alcohol abuse and/or dependence.

It remains unclear if maternal or paternal bonding exerts more influence on adult psychopathology. One study showed the association between maternal bonding and psychopathology to be stronger than that of paternal bonding (Enns *et al.*, 2002). The other study showed maternal and paternal variables to be equally important at affecting risk outcomes (Kendler *et al.*, 2000). However, there was evidence that paternal overprotection and authoritarianism reduced the risk for externalising disorders, such as alcohol or drug abuse, in males (Enns *et al.*, 2002). This is supported by the finding of another study where strict control was related to lower engagement in alcohol use in young adolescents (van der Vorst, Engels, Meeus, Deković & Vermulst, 2006).

Kendler *et al.* (2000) concluded that impact of parenting on substance disorders was mediated through their co-morbidity with major depression, generalised anxiety disorder and phobias. This conclusion appears supported by results published by Rae *et al.* (2002) who showed that the PBI scores of patients with major depression did not differ between those patients with or without alcohol problems.

Another line of enquiry within research has been to investigate the effect of parental alcoholism on attachment styles and on adult psychopathology. El-Guebady *et al.* (1993) investigated the difference between adult children of alcoholics and adult children of non-alcoholics and showed that parental alcoholism had influenced their attachment styles. Female children of alcoholics showed a distinctive dysfunctional attachment profile. However, there was no difference between male children of alcoholics and male children of non-alcoholics.

Senchak *et al.* (1995) also compared outcomes in college students who were children of alcoholic, divorced and control parents. Children of alcoholics reported less paternal warmth than children of divorced parents or controls. It was concluded that only the relationship between the child and father in families with paternal alcoholism was affected. Post hoc analyses showed small but significant correlations between paternal warmth and psychosocial functioning, however, no correlations on the relationship between paternal warmth and drinking behaviour were reported. The study only looked at children of alcoholic fathers. Maternal warmth and/or control, however, were some of the main factors implicated by other studies in the development of adult psychopathology.

Most relevant to the current study although having used other measures, Kassel *et al.* (2007) investigated the influence of self-esteem on the relationship between adult attachment styles and drug use frequency in college students. They found both self-esteem (Rosenberg Self-



Esteem Scale) and dysfunctional attitudes (Dysfunctional Attitude Scale) to be mediators of this relationship.

Some of these studies did not use the full PBI, whereas others did, and it is possible that the altered item presentation and factor structure have affected the findings. Additionally, this makes it hard to compare the results with those of other studies and draw meaningful conclusions.

In summary, these studies support the role of parental bonding in the development of adult alcohol problems. In particular, a lack of care or coldness and high control have been implicated in later psychopathology. No study has tried to establish the relationship between parental bonding and alcohol problems or consumption. As it remains unclear which of these parental bonding factors is the most important, the study will investigate the relationships between aspects of parental bonding and alcohol problems. It will therefore be hypothesised that there is a negative relationship between perceived parenting styles of *Maternal & Paternal Care* and alcohol-related problems (i.e. low *Care* is related to high alcohol problems). Furthermore, a positive relationship between perceived parenting styles of *Maternal & Paternal Control* and alcohol-related problems is proposed (i.e. high *Control* is related to high alcohol problems).

## 2.7. The Effects of Absent Parents

The previous section presented research of the detrimental effects of poor attachments relationships with parents on adult outcomes for mental health. Over the last 50 years, societal developments have led to changes in the ways people lead their lives and in the ways families are structured (Miller & Ridge, 2001). As a result, growing up in one-parent families has become increasingly likely (Weitoft *et al.*, 2003). From an attachment perspective, growing up with only parent is likely to have profound effects on the child and the way they relate to their world throughout their lives. This section will briefly present some of the research findings about the effects of single-parent families on health outcomes.

Research over the last years has shown that growing up in different family contexts can lead to different developmental outcomes (Mackay, 2005). Lone-parent families have attracted particular research interest but a complex interplay of factors needs to be taken into account when looking at the effects of absent parents or lone-parent families. Generally speaking, children from one-parent families have been found to do less well on various measures of well-being than their counterparts growing up with two parents (Mackay, 2005). Parental

separation has been shown to have effects on a wide range of outcomes, including mental and emotional health, physical health, cognitive capacity, schooling, social conduct and behaviour, peer relations, criminal offending, early departure from home, substance use and smoking, early-onset sexual behaviour and teenage pregnancy (Mackay, 2005).

When looking at the effect of single-parenting, the reasons why single-parent families came to be has to be taken into account. For only a few people, bringing up a child alone is a conscious choice; often divorce, separation or death of the other parent forces a change in circumstances. The circumstances of the parental separation, for example if alcohol and drug abuse or violence and hostility have played a role, can influence the effects a separation can have on the child. Single-parenthood also affects the health of the parents; single mothers have been shown to be of poorer health than mothers in two-parent families (Miller & Ridge, 2001). Stressful separations also affect the emotional well-being and mental health of parents; stressful break-ups can compromise the ability of a parent to rear their child effectively and to be emotionally available to the child (Barnett, 2010; Taylor & Andrews, 2009).

The outcomes of children from single-parent families are influenced by many other factors. The education level and occupation of the parent, their income and the support network available to them, as well as the parent's age can play a role (Mackay, 2005). Single-parenting can be accompanied by disadvantages in some of these factors which are likely to be prepotent in the association with poor outcomes rather than single parenting in itself (Mackay, 2005).

Separation or absence of one parent often has profound effects on the financial circumstances of the family as well as the social and family network that is available to them. For example, there is a higher risk of poverty for single-parent families than for families with two parents (Miller & Ridge, 2001). Lack of financial resources has been implicated as one of the main reasons for the increased risk for children's future health (Weitoft *et al.*, 2003).

An extensive Swedish study published in the Lancet used Swedish national registries to investigate the relationship between family structures and psychiatric problems in children (Weitoft *et al.*, 2003). The study included 65,085 children from single parent households (mostly living with their mothers) and 921,257 further children who lived with both parents. No further details about the single-parent families were gathered. The study aimed to explore the differences in injury, severe morbidity and mortality between these children. The researchers found increased risks of injury, suicide or suicide attempt, psychiatric disease

requiring hospitalisation and addiction after confounding factors were controlled for. Boys in single-parents families had a higher risk for all-cause mortality, drug addiction and psychiatric disease than girls (Weitoft *et al.*, 2003). Another study showed that although a relationship was confirmed between parental absence and long-term hospitalisation, no relationship was found for parental absence and mental health problems that were treated in a community setting (Stastny, 2003). The results implied that living in single-parent households did not increase the likelihood of psychiatric disorders per se but affected the course and outcome of the problems and appeared to increase the likelihood for institutionalisation.

A longitudinal study of New Zealand youths showed a relationship between single-parent backgrounds and drug abuse, however, they emphasised that 15-year olds with substance abuse, conduct and mood disorders were more likely to come from seriously disadvantaged, dysfunctional and disorganised home environments (Fergusson *et al.*, 1994).

Overall the size of the relationships between family structure and child outcomes have been shown to be of small, never explaining more than 3% of the variation in outcome measures (Mackay, 2005). 'Father absence', in particular, has been shown to have little effect on the differential outcomes between single- and two-parents families (MacKay, 2005). Although the absence of parents can have detrimental effects in individual cases, other absence- or separation-related factors have usually been shown to have a stronger relationship with poor outcomes. Therefore the information about the absence of a parent in itself has little power to predict outcomes (Mackay, 2005).

## **2.8. Emotion Regulation and Alcohol: The Role of Problem Solving**

As outlined earlier, developmental disruption is often associated with difficulties in emotion regulation. 'Emotion regulation' is a term used to describe the processes through which individuals modulate their emotions consciously and nonconsciously in order to respond to environmental demands (Aldao *et al.*, 2010). Theoretical models have associated adaptive strategies of emotion regulation with increased psychosocial functioning and good health outcomes (John & Gross, 2004). Conversely, emotion regulation has also increasingly been incorporated into models of psychopathology, including models of alcohol abuse disorders (Sher & Grekin, 2007; Tice *et al.*, 2001). Individuals who cannot effectively regulate emotions may experience more severe and longer lasting periods of distress. As a result, alcohol is used by some individuals to escape from or down-regulate distressing emotions (Sher & Grekin, 2007). Therefore the use of alcohol serves as an emotion-regulation strategy

in its own right (Sher & Grekin, 2007). This may reduce the need to resort to other forms of emotion-regulation strategies as the individual's emotion-regulation needs have already been filled. This would explain the results of a recent meta-analysis that showed only weak correlations between substance use and emotion regulation strategies (Aldao *et al.*, 2010). In addition to reducing negative emotions, alcohol consumption is reinforced by the satisfaction of a high appetitive drive (Aldao *et al.*, 2010). Reward sensitivity is the mechanism that makes individuals prone to the reinforcing effects of alcohol (Sinha, 2009). The effect on the reward systems in the brain is potentiated by emotional distress (Brady & Sinha, 2005). Individuals who have difficulties regulating their emotions, experiences chronic emotional distress. If these individuals are also high in reward sensitivity, then they appear particularly prone to the development and maintenance of alcohol and other substance abuse disorders (Aldao *et al.*, 2010).

There are six emotion-regulation strategies: avoidance, acceptance, problem solving, rumination, reappraisal and suppression (Aldao *et al.*, 2010). In a recent meta-analysis these specific regulatory strategies were linked to psychopathology. Large effect sizes were found for rumination; medium to large effect sizes for avoidance, suppression and problem solving. The regulatory strategies of reappraisal and acceptance resulted in small to medium effect sizes (Aldao *et al.*, 2010).

Reappraisal and problem solving are adaptive strategies that have been highlighted for decades in theoretical models of stress and coping and in cognitive-behavioural theories (e.g. Beck, 1976; Folkman & Lazarus, 1986; Marlatt *et al.*, 1988). Problem-solving is defined as the conscious attempt to change a stressful situation or contain its consequences (Aldao *et al.*, 2010). Problem solving is of particular interest to this study for a number of reasons. Firstly, as an adaptive strategy it has been shown by the aforementioned meta-analysis to have the strongest connection with psychopathology. Secondly, it is of particular interest in the list of emotion-regulation strategies as problem solving does not directly act to regulate emotions; it acts by modifying or eliminating stressors and regulating emotions indirectly. Thirdly, previous research has connected problem-solving with alcohol and substance use (Cooper *et al.*, 1992; MacKay *et al.*, 1991). Furthermore, problem solving is at the heart of many therapeutic approaches to treat disorders of alcohol and substance abuse (Marlatt *et al.*, 1988).



## 2.9. Social Problem Solving and Self-Esteem in Coping and Social Skills Training

Treatment approaches that focus on teaching problem solving strategies, like Coping and Social Skills Training, have their foundations in Social Learning theory (e.g. Marlatt *et al.*, 1988). Social Learning theory conceptualises alcohol dependence as a maladaptive strategy for coping with stress elicited by environmental demands (Bandura, 1969, 1977). Marlatt (1979) believed that drug use is a habitual, overlearned coping style, whereas later this view was adapted to acknowledge that drug or alcohol use might represent the extent of the existing coping repertoire (MacKay *et al.*, 1991). The model emphasises the role of the social environment and vicarious learning in the development of alcohol problems. Cognitive variables, such as self-efficacy and outcome expectancies are also seen as major determinants of behaviour. The use of alcohol by role-models such as family or peers is observed and positive expectations about the consequences are developed. The observed behaviours are imitated and the expectations about the effects of alcohol are subsequently reinforced.

Coping and Social Skills Training has dominated the literature for the last 30 years (O’Leary & Monti, 2002). The main aim of Coping and Social Skills Training is to improve one’s adaptive coping skills to manage stressful or ‘high-risk’ situations more effectively. As already outlined, the main assumption of the approach is a lack of affect regulation and interpersonal skills. The programme aims to counteract this by teaching the appropriate coping skills. Particular focus is hereby on strategies for increasing problem-solving ability to facilitate change and on strategies to improve the individual’s self-esteem, as low self-esteem has also been implicated in the development of alcohol problems (Trucco *et al.*, 2007). The clinical validity of the model has been supported (Marlatt, 1996), showing the efficacy of coping-skills training in high-risk situations (Wanigaratne *et al.*, 2005).

Research has also investigated the effectiveness of such treatments in problem drinkers. For example, McMurrin & Cusens (2003) showed that patients who completed their Control of Violence for Angry Impulsive Drinkers (COVAID) programme showed improved abilities in social problem solving but no consistent effects on alcohol consumption. A recent meta-analysis reviewing all 31 studies that had investigated the effectiveness of Problem Solving Therapy found that it was significantly more effective than no therapy, treatment as usual and attention placebo but not better than any other specific treatment offered as part of the study (Malouff *et al.*, 2007). The meta-analysis, however, included only one study that investigated problem solving therapy in an alcohol-dependent sample. Malcolm (2004) examined the effects of a coping and social skills intervention on drinking and self-esteem.

He found that despite decreases in alcohol and drug consumption, the treatment had no effect on self-esteem measures. Other research found that self-efficacy was not a predictor of treatment outcome (Lennings, 1996).

## **2.10. Social Problem Solving in an Alcohol-related Context**

In the previous section, the role of problem solving as a strategy of emotion regulation was discussed. This section will present the findings of research where social problem solving was investigated in an alcohol-related context.

Social problem solving has mainly been studied in relation to aggression and its treatment, sometimes including the role of alcohol in aggression. Ramadan & McMurran (2005) found that poor social problem solving was related to harmful drinking only in men. They investigated the relationships between social problem solving, impulsiveness, sensation seeking, aggression and harmful drinking in students. They concluded that high levels of impulsiveness may interfere with the acquisition of skills in social problem-solving. Furthermore, deficits in social problem solving were related to a greater risk of aggression (McMurran *et al.*, 2002; Ramadan & McMurran, 2005). Impulsiveness had previously been linked to alcohol problems in men and women in other studies (e.g. Patock-Peckham & Morgan-Lopez, 2006).

McMurran & Cusens (2003) conducted a pilot study of the effectiveness of a structured, CBT programme for people in the community who are at risk for aggressive behaviour. The study only had a small number of completers, who showed improvements on impulsiveness, anger control, alcohol-related aggression beliefs and social problem solving. However, the level of alcohol consumption was not affected in all individuals but self-reported aggression was low. In another evaluation of an intervention, adolescents underwent a 'social-competency programme'. Problem solving skills regarding substance use avoidance were measured. The social-competency programme had increased problem solving skills in the intervention group but problem solving was not increased in the information-only and control groups (Wagner & Beaumont, 2007). Another study investigated social problem-solving abilities and personality-disorder characteristics in individuals receiving inpatient substance-abuse treatment. Individuals with more confidence in their problem solving abilities were more likely to have drug-free urine tests and pass breathalyser tests (Herrick & Elliott, 2001)

Another line of investigation has been to study the relationship between drinking and problem solving in adolescents or undergraduate students. Better skills of social problem solving were found to be related to less high-risk sexual behaviours, less drug use and more academic engagement. Furthermore, chronic anxiety and social problem solving were found to be negatively correlated, meaning that higher anxiety was related to lower problem solving skills (Knauth *et al.*, 2006). Another study investigated the effects of social problem solving, self-control and drug and alcohol avoidance skills in relation to drug use in adolescents. The relationship of these variables on variety and severity of drug use was only significant for females at 12-month follow-up but did not relate to any drug outcomes for males (Jenson *et al.*, 1993). Jaffee & D'Zurilla (2009) examined the role of social problem solving in the relationship between personality and substance use in adolescents. The study used the Social Problem Solving Inventory (Revised) (D'Zurilla *et al.*, 2002). The rational problem solving dimension significantly mediated the relationship between hopelessness and lifetime alcohol and marijuana use. Another study using undergraduate students showed that ineffective problem-solving skills were related to the consumption of more alcohol within a two-week period. Other dimensions of problem solving, however, were not found to be related to illicit drug use or tobacco use (Godshall & Elliot, 1997). Social problem solving skills in relation to binge drinking among undergraduate students have also been examined; binge drinking women were found to have less effective social problem-solving abilities than women who did not binge drink (Dreer *et al.*, 2004).

Parents' alcohol use was found to be related to alcohol and cigarette use among their children; Hops *et al.* (1990) studied the social problem-solving interactions of young adolescents in single-parent and intact families on nonsubstance-related and substance-specific issues.

Although social problem solving appears to have been studied less frequently than other factors in alcohol research, a link between poor problem solving strategies and alcohol use has been established. The mechanisms through which this link operates have been poorly studied in alcohol-dependent individuals. The study therefore hypothesises that a link between social problem solving and alcohol problems exists. A negative relationship between positive aspects of social problem solving and alcohol-related problems is proposed (i.e. low ability in positive aspects of social problem solving is related to high alcohol problems). Furthermore, a positive relationship between dysfunctional aspects of social problem solving and alcohol-related problems is proposed (i.e. high dysfunctional problem solving is related to high alcohol problems).

### 2.11. Self-esteem in an Alcohol-related Context

As previously outlined, early attachment relationships have been shown to affect the sense of self in children (e.g. Price & Glad, 2003; Rangarajan, 2008). It appears that the foundations for self-esteem in adulthood are set by early environmental influences. Treatment approaches for alcohol problems focus on increasing self-esteem alongside improving problem solving skills (e.g. Marlatt *et al.*, 1988). Although self-esteem is given such a central role in interventions, there has only been a limited amount of research clarifying the role of self-esteem in the development, maintenance and treatment of alcohol disorders. This section will review the existing literature on self-esteem in an alcohol-related context.

Most studies have looked at self-esteem and alcohol use in non-dependent drinkers, particularly college students. However, most of these studies were not able to establish a relationship between self-esteem and alcohol consumption. For example, Greenberg *et al.* (1999) found no relationship between self-esteem and drug or alcohol dependence in college students. Similarly, self-esteem did not predict alcohol use in college students (Luhtanen & Crocker, 2005); however, academic competence predicted lower use of alcohol. These results were confirmed more recently in a longitudinal study of over 1000 New Zealand youths; Boden *et al.* (2008) showed that the effect of self-esteem during adolescence on later developmental outcomes was weak and largely explained by psychosocial context. College drinking was best predicted by a number of variables, such as personality, e.g. sensation seeking and impulse-control (Baer, 2002; McAdams & Donnellan, 2009), thought processes about drinking, e.g. alcohol expectancies (Brown, 1985), emotional states (Baer, 2002) and social norms (Baer, 2002; Neighbors *et al.*, 2007; Sher & Rutledge, 2007). A recent study found self-esteem to be the mediator of the relationship between attachment styles and drug use frequency in a student sample (Kassel *et al.*, 2007).

Self-esteem studies in alcohol-dependent populations mainly concentrated on the role of self-esteem in the treatment process. An early study on the role of self-esteem by Beckman (1978) found that self-esteem of female alcoholic patients was lower than that of male alcoholics and female controls but similar to that of female psychiatric inpatients. She was able to detect increases in self-esteem at one year follow-up. Lennings (1996) found that drinking self-efficacy measured at treatment onset was not a predictor of treatment outcome. Malcolm (2004) used individual and group interventions with life skills and relapse prevention training to treat homeless, alcohol-dependent men. No increases in self esteem were found despite decreases in alcohol and drug use. Malcolm concluded that self-esteem



might play a different role in alcohol-dependent individuals than it does in a student population. More recently, Pekala *et al.* (2009) investigated some of the factors that predict self-esteem in alcohol-dependent individuals. They found that self-esteem was best predicted by serenity and anger/impulsivity and that stimulus control, anxiety and child abuse also played a role.

When considering the effect of parental alcoholism on self-esteem and adult drinking, studies have looked at adult children of alcoholics and were generally able to establish a relationship between the variables. For example, a recent study showed that parental drinking predicted heavy drinking at age 35 (Merline *et al.*, 2008). Parental drinking could not always be directly implicated in later adult outcomes but appears to act through mediator variables. It appears that family functioning is one important factor that is affected by parents' drinking. For example, Werner & Broida (1991) showed that parental alcoholism was not a predictor of adult self-esteem in itself but familial dysfunction was reflected in adult self-esteem. Another recent study found family cohesion to be the mediator between parental drinking and low global self-worth in 10-14 year olds (Bijttebier *et al.*, 2006). Similarly, Woldt & Bradley (1996) were able to establish that the drinking of both parents had an effect on adult alcohol consumption in their offspring. They found the drinking of the opposite sex parent to have the most negative influence on the individual's self-perception. They showed adaptive family functioning (which was affected by parental drinking) to have the strongest link with more personal drinking motives and greater alcohol involvement later in the offspring's life.

Another important mediator through which the relationship between parents' drinking and self-esteem is affected is parental attachment. Rangarajan (2008) investigated this relationship between parental alcoholism, attachment patterns and self-esteem in more detail. It was shown that maternal attachment was more important to offspring self-esteem than paternal attachment. Maternal and paternal attachment explained 15 per cent of the variance in offspring self-esteem. In addition, parental attachment was found to be a full mediator between paternal (but not maternal) alcoholism and offspring self-esteem.

Patock-Peckham & Morgan-Lopez (2007, 2009) investigated the role of parental overprotection as this had previously been linked to internalizing symptoms in offspring. Within this model, parenting styles and parental confidence are linked to alcohol-related problems through depression and self-esteem. A poor bond with one's father was related to depression, which was predictive of alcohol problems. A protective factor against depression was having a father who was confident in his child's ability to make autonomous decisions.

In males, self-esteem was a mediator between parental overprotection and depression and a mediator between maternal autonomy and depression. They concluded from their results that parenting influences alcohol problems through internalizing pathways. Patock-Peckham & Morgan-Lopez (2007, 2009) used the PBI to measure parental bonding in their college student sample. However, they used four dimensions of bonds with parents: rejection, care, overprotection, and allowance of autonomy. The main outcome measure in their study was depression and they only investigated the links of parental attachment with alcohol use indirectly through depression.

In summary, the role of self-esteem in the development, maintenance and treatment of alcohol abuse disorders could not be satisfactorily clarified yet. Individuals with alcohol problems appear to have lower self-esteem than control samples but self-esteem does not appear predictive of treatment success. Furthermore, dysfunctional attitudes about the self are based on poor early attachment relationships. The activation of such dysfunctional attitudes negatively affects self-esteem. It is thought that individuals are more likely to abuse alcohol and other substances when their self-esteem is depleted as this increases stress and negative affect (Kassel *et al.*, 2007). Therefore it is hypothesised that the relationship between parental bonding and alcohol use is mediated by dysfunctional attitudes about the self and low self-esteem. Similarly, self-esteem is closely linked to the ability to problem solve: self-esteem increases when problems are successfully mastered. Conversely, negative problem solving experiences are likely to activate dysfunctional attitudes about the self. It is therefore also hypothesised that self-esteem mediates the relationship between social problem solving and alcohol problems.

## 2.12. Age of Drinking Onset

As indicated earlier, this study aims to explore some of the issues related to problem drinking. One area of rising concern is the early age at which many people in Scotland start consuming alcohol. The Scottish Executive (2007) has reported increases in underage drinking since 1990, for examples the numbers of 13-year olds who drink have doubled. This sections aims to explore the links of drinking onset and alcohol problems.

There is evidence in the literature that the age of first alcohol consumption is related to the level of problems a person is experiencing (e.g. Grant *et al.*, 2001). Hingson *et al.* (2006) showed that the younger someone starts to drink, the higher the likelihood of them developing alcohol dependence within 10 years of starting to drink. Furthermore, they were

also able to show that the younger someone starts to drink, the stronger the relationship with chronic relapsing dependence, with longer episodes and a wider range of symptoms.

Variables that might be related to early drinking onset include genetic factors, disinhibitory behaviour patterns and other psychiatric disorders (Hingson *et al.*, 2006). Physical, sexual or psychological abuse or having parents with psychiatric disorders can also lead to alcohol use at an earlier age, often used to cope with symptoms of post-traumatic stress. Robins (1984) pointed out that early onset of drinking is in such cases more an indicator of other psychiatric problems than a cause of the problem itself. Social environments or peer groups that facilitate early and easy access to alcohol are others factor affecting the onset of drinking age. Twin and adoption study have shown that alcohol use in 12 to 19 year olds is mainly due to environmental influences rather than genetics (Rhee *et al.*, 2003). Dawson *et al.* (2008) have shown that there is an association between the age of first drink and alcohol use disorder which is controlled by poor decision-making and/or reward-processing skills. Shoal *et al.* (2007) showed that the attitudes underlying behavioural problems (positive attitudes toward delinquency) were the most consistent mediator of drinking and strongly predicted drinking frequency. It has therefore been suggested that environmental factors are most predictive of initial alcohol exposure (and therefore first use) whereas environmental and genetic factors affect the development of dependence (Hingson *et al.*, 2006).

Much of the research on age of drinking onset has been carried out in the U.S. where the legal age for drinking is 21. Research has shown that European countries with a lower legal drinking age have more 15-year olds who drink alcohol, many of them drinking heavily or to intoxication (Andersson *et al.*, 2007). Two thirds of 15-year olds had consumed alcohol at least once but the average in most countries was almost 90 per cent had consumed alcohol at least once. Furthermore, half of the study's youths had been intoxicated at least one in their life (Andersson *et al.*, 2007). Youths in the UK showed high figures for drunkenness and heavy episodic drinking and reported problems relating to their drinking.

This study will collect information about the age of drinking onset in a sample of dependent drinkers and will therefore allow a brief look at concerns about drinking alcohol at early ages.

### 2.13. Neuropsychological Effects of Alcohol

The effects of alcohol on memory, visual-spatial processing, problem solving and executive function have been well documented in men suffering from chronic alcoholism (for example,

Glass *et al.*, 2009) and should be briefly considered as they have clinical implications as well as implications on the findings of the study.

Lawrence *et al.* (2009) found impairments in decision-making and reflection impulsivity. Impulsive decision-making has been suggested as vulnerability factor that predisposes people to dependence (Lawrence *et al.*, 2009). Alcohol-dependent individuals performed worse than a control group on performance tasks assessing attention and executive function. Cognitive impairment was found to be pronounced in recently abstinent patients (Loeber *et al.*, 2009). Neurocognitive deficits in working memory and deliberation reflect long-term effects of alcohol consumption on the dorsal pre-frontal cortex (Lawrence *et al.*, 2009). Furthermore, cognitive deficits in impulse control and decision-making were shown to predict treatment poor outcomes in opiate users (Pasetti *et al.*, 2008).

Heavy drinking in adolescence appears to affect the maturation of the brain. Studies have shown that adolescents who drink heavily have shown deficits in memory, spatial relations and planning abilities, plus deficits in retrieval of verbal and nonverbal information and in visuo-spatial functioning (Brown *et al.*, 2000). MRI studies have confirmed that the development of the hippocampus was particularly affected by alcohol use. Hippocampal volume was significantly smaller in adolescents with alcohol use disorder and total hippocampal volume correlated with age of drinking onset and negatively with duration of drinking (De Bellis *et al.*, 2000).

In addition, elevated blood alcohol level (BAL) impairs psychomotor performance on a range of tasks (Finnigan & Hammersley, 1992; Verster *et al.*, 2003) and many cognitive functions, including executive functioning, are also affected (Cromer *et al.*, 2010). These effects are often subtle and even small amounts of alcohol impair performance on many common tasks (West *et al.*, 1993).

Observed impairments in executive functioning might be due to alcohol toxicity or they might reflect pre-existing cognitive deficits that predisposed the person towards substance abuse and comorbid psychiatric disorders (Glass *et al.*, 2009). In addition, alcohol intoxication makes accidents more likely and such acquired brain damage complicates the picture further. However, from the research it appears that prefrontal functioning is often affected in heavy-drinking individuals, whether this is due to acute intoxication, neuro-toxic long-term effects of alcohol, or other pre-existing or acquired conditions. One of the skills affected by diminished prefrontal cortex functioning is the ability to solve problems effectively. Poor problem solving abilities are likely to negatively affect attempts to stay abstinent or to engage in treatment. It is therefore crucial to consider poor problem solving



abilities from a neuropsychological perspective as well as a Social Learning theory perspective when planning treatment options for alcohol-dependent patients.

#### 2.14. Summary and Conclusions

To summarise, previous research findings suggest a role for attachment disturbance and poor parental bonding as risk factors for the development and maintenance of alcohol use disorders. Evidence also suggests a role for attachment in the development of maladaptive coping strategies. Particularly in the field of alcohol and substance abuse, the role of maladaptive coping strategies and self-esteem has been poorly investigated. No study has investigated potential links between alcohol problems, parenting styles, self-esteem and social problem solving. By investigating the relationship between alcohol problems, perceived parental bonding, self-esteem and problem solving style, this study aims to advance our understanding of how parental bonding self-esteem and social problem solving impact on subsequent alcohol use.

### 3. Hypotheses

The primary objective of the study was to investigate the relationships between aspects of parental bonding and alcohol problems and the relationships between aspects of social problem solving and alcohol problems. The following hypotheses result from this objective<sup>1</sup>:

#### 3.1.1. Relationships between Parental Bonding and Alcohol Problems

- 1.a H<sub>0</sub>: There is no population correlation between *Maternal Care* (PBI) and APQ *Common* ( $\rho=0$ ).  
H<sub>1</sub>: There is a significant negative correlation between *Maternal Care* (PBI) and APQ *Common* ( $\rho < 0$ ).
- 1.b H<sub>0</sub>: There is no population correlation between *Maternal Care* (PBI) and *Audit* ( $\rho=0$ ).  
H<sub>1</sub>: There is a significant negative correlation between *Maternal Care* (PBI) and *Audit* ( $\rho < 0$ ).
- 1.c H<sub>0</sub>: There is no population correlation between *Paternal Care* (PBI) and APQ *Common* ( $\rho=0$ ).  
H<sub>1</sub>: There is a significant negative correlation between *Paternal Care* (PBI) and APQ *Common* ( $\rho < 0$ ).
- 1.d H<sub>0</sub>: There is no population correlation between *Paternal Care* (PBI) and *Audit* ( $\rho=0$ ).  
H<sub>1</sub>: There is a significant negative correlation between *Paternal Care* (PBI) and *Audit* ( $\rho < 0$ ).
- 1.e H<sub>0</sub>: There is no population correlation between *Maternal Control* (PBI) and APQ *Common* ( $\rho=0$ ).  
H<sub>1</sub>: There is a significant positive correlation between *Maternal Control* (PBI) and APQ *Common* ( $\rho > 0$ ).
- 1.f H<sub>0</sub>: There is no population correlation between *Maternal Control* (PBI) and *Audit* ( $\rho=0$ ).

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<sup>1</sup> The following abbreviations are used in hypotheses:

PBI – Parental Bonding Instrument

APQ – Alcohol Problems Questionnaire

Audit – Alcohol Use Disorders Identification Test

SPSI-R:S - Social Problem Solving Inventory (Revised: Short)

SLCS-R - Self-Liking/Competence Scale (Revised)

H<sub>1</sub>: There is a significant positive correlation between *Maternal Control* (PBI) and *Audit* ( $\rho > 0$ ).

- 1.g H<sub>0</sub>: There is no population correlation between *Paternal Control* (PBI) and *APQ Common* ( $\rho=0$ ).

H<sub>1</sub>: There is a significant positive correlation between *Paternal Control* (PBI) and *APQ Common* ( $\rho > 0$ ).

- 1.h H<sub>0</sub>: There is no population correlation between *Paternal Control* (PBI) and *Audit* ( $\rho=0$ ).

H<sub>1</sub>: There is a significant positive correlation between *Paternal Control* (PBI) and *Audit* ( $\rho > 0$ ).

### 3.1.2. Relationships between Social Problem Solving and Alcohol Problems

- 2.a H<sub>0</sub>: There is no population correlation between *Social Problem Solving* (Total Score) (SPSI-R:S) and *APQ Common* ( $\rho=0$ ).

H<sub>1</sub>: There is a significant negative correlation between *Social Problem Solving* (Total Score) (SPSI-R:S) and *APQ Common* ( $\rho < 0$ ).

- 2.b H<sub>0</sub>: There is no population correlation between *Social Problem Solving* (Total Score) (SPSI-R:S) and *Audit* ( $\rho=0$ ).

H<sub>1</sub>: There is a significant negative correlation between *Social Problem Solving* (Total Score) (SPSI-R:S) and *Audit* ( $\rho < 0$ ).

- 2.c H<sub>0</sub>: There is no population correlation between *Positive Problem Orientation* (SPSI-R:S) and *APQ Common* ( $\rho=0$ ).

H<sub>1</sub>: There is a significant negative correlation between *Positive Problem Orientation* (SPSI-R:S) and *APQ Common* ( $\rho < 0$ ).

- 2.d H<sub>0</sub>: There is no population correlation between *Positive Problem Orientation* (SPSI-R:S) and *Audit* ( $\rho=0$ ).

H<sub>1</sub>: There is a significant negative correlation between *Positive Problem Orientation* (SPSI-R:S) and *Audit* ( $\rho < 0$ ).

- 2.e H<sub>0</sub>: There is no population correlation between *Rational Problem Solving* (SPSI-R:S) and *APQ Common* ( $\rho=0$ ).

- H<sub>1</sub>: There is a significant negative correlation between *Rational Problem Solving* (SPSI-R:S) and *APQ Common* ( $\rho < 0$ ).
- 2.f H<sub>0</sub>: There is no population correlation between *Rational Problem Solving* (SPSI-R:S) and *Audit* ( $\rho=0$ ).
- H<sub>1</sub>: There is a significant negative correlation between *Rational Problem Solving* (SPSI-R:S) and *Audit* ( $\rho < 0$ ).
- 2.g H<sub>0</sub>: There is no population correlation between *Negative Problem Orientation* (SPSI-R:S) and *APQ Common* ( $\rho=0$ ).
- H<sub>1</sub>: There is a significant positive correlation between *Negative Problem Orientation* (SPSI-R:S) and *APQ Common* ( $\rho > 0$ ).
- 2.h H<sub>0</sub>: There is no population correlation between *Negative Problem Orientation* (SPSI-R:S) and *Audit* ( $\rho=0$ ).
- H<sub>1</sub>: There is a significant positive correlation between *Negative Problem Orientation* (SPSI-R:S) and *Audit* ( $\rho > 0$ ).
- 2.i H<sub>0</sub>: There is no population correlation between *Impulsivity/Carelessness Style* (SPSI-R:S) and *APQ Common* ( $\rho=0$ ).
- H<sub>1</sub>: There is a significant positive correlation between *Impulsivity/Carelessness Style* (SPSI-R:S) and *APQ Common* ( $\rho > 0$ ).
- 2.j H<sub>0</sub>: There is no population correlation between *Impulsivity/Carelessness Style* (SPSI-R:S) and *Audit* ( $\rho=0$ ).
- H<sub>1</sub>: There is a significant positive correlation between *Impulsivity/Carelessness Style* (SPSI-R:S) and *Audit* ( $\rho > 0$ ).
- 2.k H<sub>0</sub>: There is no population correlation between *Avoidance Style* (SPSI-R:S) and *APQ Common* ( $\rho=0$ ).
- H<sub>1</sub>: There is a significant positive correlation between *Avoidance Style* (SPSI-R:S) and *APQ Common* ( $\rho > 0$ ).
- 2.l H<sub>0</sub>: There is no population correlation between *Avoidance Style* (SPSI-R:S) and *Audit* ( $\rho=0$ ).
- H<sub>1</sub>: There is a significant positive correlation between *Avoidance Style* (SPSI-R:S) and *Audit* ( $\rho > 0$ ).



### 3.1.3. *Self-Esteem as Mediating Variable*

Furthermore, it is hypothesised that each of the above relationships is mediated by Self-Esteem. A summary of these hypotheses is presented here but the comprehensive list of all the hypothesised mediated relationships can be found in Appendix A.

3. H<sub>0</sub>: The relationships between parental bonding (the subscales of the PBI) and alcohol problems (APQ *Common/Audit*) are not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: These relationships are mediated by *Self-Liking* (SLCS-R).
4. H<sub>0</sub>: The relationships between parental bonding (the subscales of the PBI) and alcohol problems (APQ *Common/Audit*) are not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: These relationships are mediated by *Self-Competence* (SLCS-R).
5. H<sub>0</sub>: The relationships between social problem solving (the subscales of the SPSI-R:S) and alcohol problems (APQ *Common/Audit*) are not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: These relationships are mediated by *Self-Liking* (SLCS-R).
6. H<sub>0</sub>: The relationships between social problem solving (the subscales of the SPSI-R:S) and alcohol problems (APQ *Common/Audit*) are not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: These relationships are mediated by *Self-Competence* (SLCS-R).

### 3.1.4. *Further Exploration of the Data*

Numerous variables were used in this study, and it was considered worthwhile to explore the associations between them. No predictions were made about the nature or direction of these associations between the variables. Any interpretations must therefore be tentative, and firm conclusions should not be drawn until the findings have been replicated. Accordingly individual aims and hypotheses are not listed. The relationships between parental bonding with alcohol consumption, and social problem solving with alcohol consumption were considered to be the most interesting areas to explore and will therefore be explored and discussed within this study. Furthermore, the relationship between the age of drinking onset and alcohol problems will be explored and discussed.

The next chapters will present the methodology and the results of the current study. The last chapter will discuss the significance of the results in relation to previous research findings. In addition, limitations of the study are discussed and future research ideas and implications of the results are presented.

## **4. Method**

### **4.1. Ethical Approval and Informed Consent**

Ethical approval was sought and granted for this study firstly by the Ethics Committee for the Doctorate in Clinical Psychology within the School of Health in Social Science at the University of Edinburgh and secondly by the NHS Tayside Ethics Committee.

Participants were given an information sheet and consent form. Those approached were informed that participation in the study would not affect their care by the inpatient or outpatient service. Participants were made aware of their rights, for example declining participation, withdrawing from the study at any time or making a complaint. These points were also included in the accessible and comprehensive information sheet as well as the consent form. Only those who signed a declaration of consent were handed a copy of the questionnaires. The Chief Investigator additionally offered the opportunity to discuss further questions about the study before participation.

The copies of the letters showing ethical approval can be found in Appendix B.1.

#### **4.1.1. *Participant Information Sheet***

All potential participants received a copy of the Participant Information Sheet. The Participant Information Sheet followed the COREC format. The ease for reading this information sheet was assessed prior to the study using Flesch Reading Ease Test (Flesch, 1948). A Score of 68 was obtained. As a score of 60-70 indicates a reading level appropriate for 8th and 9th grade students, it was concluded that the level at which the information was presented on the participant information sheet was suitable for the patient group. A copy of the Participant Information Sheet can be found in Appendix B.2.

#### **4.1.2. *Consent Form***

The Consent Form also followed the COREC format. Participants were given a copy of their signed consent form for their own records. Originals of the signed consent forms were filed within the patients' medical records. A further copy of the signed consent form was retained by the investigator. A blank copy of the Consent Form can be found in Appendix B.3.

#### 4.1.3. Confidentiality and Anonymity

Anonymity was ensured as the questionnaires did not ask participants for names or birthdates nor was the date of questionnaire completion recorded. The questionnaires and investigator's copy of consent forms were stored in a locked filing cabinet. The investigator's copy of the signed consent form was held separately from the completed questionnaires to ensure anonymity. The principal investigator and supervisor alone had access to the consent forms and questionnaires. There was no identifiable information entered onto the database.

#### 4.2. Participants

##### 4.2.1. *The Setting: The Inpatient Treatment Unit*

The 12-bedded inpatient unit offers a 6-day education and assessment group programme and a 12-day relapse prevention group programme. All admissions are planned following initial contact with the community element of the service. Patients are most commonly referred to the service from Primary Health Care. Primary Care services are encouraged to use the AUDIT screening tool (Babor *et al.*, 1989) and to refer patients with an AUDIT score of 16 or over. Patients with a score of 16-19 on specialist assessment would typically be referred to the local voluntary alcohol agency. In order to be referred to the inpatient unit by community alcohol service a patient will have fulfilled the following criteria:

- Have accepted a recommendation from Primary Health Care that they seek help for an alcohol problem.
- Have been assessed as having a significant degree of alcohol dependence (AUDIT  $\geq 20$ )
- Have shown evidence of sustained problem recognition and a wish to change. Patients would typically have attended a number of community sessions before being offered inpatient care.
- Have not made satisfactory progress with community interventions and have agreed to a period of more intensive treatment in hospital.
- Patients are not excluded from the service or from inpatient admission on the grounds of psychiatric or physical comorbidity. Those using other drugs would be expected to have stabilised their use. Patients whose primary problem is cognitive impairment, such as the Wernicke-Korsakoff Syndrome, and who did show problem recognition and/or a wish to change their alcohol use, are cared for by other services.

The 6-day education and assessment programme aims to meet the needs of patients:

- who recognise an alcohol problem, but are uncertain about what changes they wish to make
- whose primary need is for safe detoxification
- where full assessment, for instance of comorbid mental health problems, has not been possible in the community and/or where there are pressing physical or mental health issues requiring admission.

The 12-day relapse prevention programme aims to meet the needs of those patients who have a significant degree of concern about their substance use and clear wish to change. For alcohol dependent patients this most commonly involves a wish to maintain abstinence.

All admissions are on a voluntary basis and follow on from community assessment as part of a treatment plan. During their stay all patients take part in daily psycho-educational group sessions and receive individual sessions with their named nurse throughout their stay. The 12-day programme has a particular focus on coping skills and problem solving. In addition the patients receive a health check and blood tests by the unit's physician at admission and further consultations or check-ups if required. Patients are required not to consume any alcohol or illegal drugs during their stay. All patients are followed up by community services on discharge.

#### *4.2.2. Inclusion and Exclusion Criteria*

Patients entered into the study have been referred to an NHS Alcohol Treatment Service and have been offered a period of inpatient treatment by community staff. The following inclusion and exclusion criteria were applied:

Inclusion criteria: Receiving current inpatient treatment for a drinking problem and therefore having fulfilled the above referral criteria for receiving inpatient treatment

Exclusion criteria: (a) The use of illegal Class A drugs in addition to alcohol or medication. (b) Severe cognitive impairments, such as caused by brain injury, Wernicke-Korsakoff's syndrome, dementia or learning disability (c) Acute psychotic symptoms (d) Having participated in this study during previous hospital treatment



#### 4.2.3. *Demographic Characteristics*

An inpatient sample from a specialist treatment facility who have been detoxified within the unit completed a battery of questionnaires focussing on alcohol consumption, alcohol-related problems, self-esteem, social problem solving and perceived parenting.

One participant, who had been admitted to the programme on two occasions, filled in the questionnaires during each of his stays. After this was detected, the second set of questionnaires was removed and destroyed.

The sample consists of 90 inpatients who volunteered to take part in the study. On some measures missing data have caused the number of valid cases being less than 90.

The participants were between 27 and 62 years old, with a mean age of 43.0 years ( $SD=8.7$ ).

Thirty-two participants had been admitted to the 12-day programme (35.6%) and 58 participants (64.4%) were admitted to the 6-day programme. Of the 90 participants, 63 were male (70%) and 27 female (30%). Eighty-seven participants (96.7%) noted their ethnic origin as White British. One was White Irish (1.1%) and two of 'any other white' background (2.2%).

The majority of the participants were single (42.2%); a further 35.5 per cent were divorced or separated. Roughly every sixth participant was either married, re-married or living with a partner (15.6%). Almost two thirds of the participants reported living by themselves (65.6%). Just under one third lived with a partner or with family (31.1%). A small number of participants lived with friends (1.1%) or in a hostel (2.2%).

The majority of participants were either unemployed (47.8%) or did not work due to health reasons (32.2%), making up a total of 80 per cent of participants not in employment. Approximately every sixth participant was employed (16.6%). From the four participants who indicated 'other' employment status, two specified that they were retired, one was a househusband and the other did not specify their employment status.

Seventy-one of the participants had children. The average number of children, for those who had them, was 2.4 children ( $SD=1.4$ ), ranging from 1 to 7 children. The average age for the oldest child was 21.9 years ( $SD=9.0$ ) and for the youngest child 14.1 years ( $SD=8.8$ ). Fifty-five participants with children did not live with their children (77.5%). Thirteen of those reported not having access to their children (23.6%), 41 did see their children (74.5%) and one did not answer the question (1.8%). This means 18.3 per cent of participants with children did not have access to see their children.

When asked to note down a typical drinking week, participants reported consuming on average 208.8 units of alcohol (SD= 117.0) on 6.7 drinking days (SD=1.0) per week. When asked how much participants consume on a typical drinking occasion, they reported consuming 30.0 units on average (SD= 16.2). Eleven participants reported not drinking every day of the week. The mean weekly consumption was less than 50 units for 3 participants; all of them being female. The mean AUDIT score was 32.65 (SD=5.27) for the sample.

Participants stated that they consumed their first alcohol beverage at an average age of 14.9 years and first 'got drunk' at an average age of 15.5 years. They started drinking regularly at an average age of 19.8. Furthermore, participants reported that they first started drinking the amount they consume now at an average age of 31.5 years and first noticed problems in connection with alcohol at an average age of 31.4 years. In addition, sixty-three participants (70%) reported that someone in their family suffered from alcohol problems; for 37 participants (43%) it was one or both of their parents. A table summarising the participants' drinking history is included in Appendix C.1.

#### 4.3. Design

The study is a non-experimental, cross-sectional questionnaire study.

#### 4.4. A Priori Power Calculation

During the preparatory phase of the study, an a priori power calculation was carried out to estimate the sample size needed to achieve adequate power (Cohen, 1988). The power calculation tool GPower (Erdfelder *et al.*, 1996; Faul *et al.*, 2009) was used. The following assumptions were made: The primary model within the study will be tested using multiple regression analysis. The model will examine whether the 11 independent variables from the three measures predict the dependent variable (drinking problems/alcohol consumption). The significance level  $\alpha$  will be set at  $\alpha=0.05$ . It was calculated that in order to achieve power of 0.80 and a medium effect size  $f^2=0.15$  (medium effect by effect size convention) a sample size of 123 participants would be required.

Due to the time constraints of the study, it was not possible to collect data from 123 participants. As the study continued, more participants who had previously been through the programme were re-admitted, and as a result, the pool of inpatients to recruit from the programmes decreased. As the study had certain external time constraints, the decision was taken to end data collection at that point. It was proposed to proceed by generating a

correlation matrix between the dependent and independent variables. Only those independent variables should be retained that correlate significantly with the dependent variables. It was assumed likely that less than five independent variables will remain. The sample size of 90 will be sufficient to detect moderate to large effects within such a sample size.

A sample size of 90 participants still compares favourably with similar studies that have previously been carried out using a similar methodology. For example, Swanson *et al.* (2010) assessed 43 anorexic inpatients to test the role of maternal bonding as a mediating variable in their model of eating pathology. Paterson *et al.* (2010) used data from 55 inpatients to test another mediational model in Anorexia Nervosa. Ford and Collins (2010) tested an integrative model of self-esteem as a moderator of psychological and physiological responses to interpersonal rejection using data from 78 participants. Zissi *et al.* (1998) tested a mediational model of quality of life using the data from 54 individuals with severe mental health problems.

#### 4.5. Measures

A battery of questionnaires focussing on alcohol consumption, alcohol-related problems, self-esteem, social problem solving and perceived parenting was administered to the volunteer inpatient sample. Contemporary research has suggested the relevant constructs to be of a multi-dimensional nature. New tools to measure the concepts more effectively have been developed (Tafarodi & Milne, 2002; Tafarodi & Swann, 2001; D'Zurilla *et al.*, 2002). However, a literature search using OVID databases (Medline, PsychInfo, Embase) revealed that no studies had used the Self-Liking/Self-Competence Scale (Tafarodi & Swann, 2001) in relation to alcohol. Furthermore, only one study was found (Jaffee & D'Zurilla, 2009) that had used the Social Problem Solving Inventory (SPSI-R) (D'Zurilla *et al.*, 2002) in an alcohol-related context.

These questionnaires are standardized and are routinely used in clinical practice and research. All measures, apart from the Social Problem Solving Questionnaire and the Self-Liking/Competence Scale, have been administered to alcohol-dependent individuals before. However, these questionnaires have never been used in combination, asking the current research questions. The current study therefore fills a gap in the literature.

The Social Problem Solving Questionnaire and the Self-Liking/Competence Scale, although not previously administered in this population for research purposes, have been administered to other groups for research purposes, including eating disordered inpatients, adults with personality disorder, adolescents with pre-natal alcohol exposure and undergraduate students

(McGee *et al.*, 2008; McMurran *et al.*, 2008; Ramadan & McMurran, 2005; Swanson *et al.*, 2010).

#### 4.6. Independent Variables

##### 4.6.1. *Parental Bonding Instrument (PBI)*

This 25-item questionnaire measures fundamental parental styles as they have been perceived by the child (Parker *et al.*, 1979). The questionnaire needs to be completed separately for mothers' and fathers' parental styles. The scales correlate with other parenting assessments. The current study used the short, 10-item version of the PBI (Pederson, 1994). The 10-item self-report for each parent uses a 4-point scale (*strongly agree, agree, disagree, strongly disagree*). Two dimensions are measured for each parent – *Care* and *Control*. This results in four different types parenting styles. Items for each scale include the following:

*Maternal Care*: 'She was affectionate to me'

*Maternal Control*: 'She tried to control everything I did'

*Paternal Care*: 'He appeared to understand my problems and worries'

*Paternal Control*: 'He let me decide things for myself'

The questionnaire has good psychometric properties. It is insensitive to respondents' mood. The measure is valid and consistent while still being relatively short. It is a popular measure. The search item 'Parental Bonding Instrument' using OVID databases (Medline, PsychInfo, Embase), returns 514 studies which have used this measure since 1990. In research it is frequently used in student populations and the general population as well as adults with mental health problems. This measure has been used in various substance using populations, including drug and/or alcohol abusing adults, students with suicidal behaviour and substance misuse, substance abusing mothers and adults with alcoholic parents.

A copy of the PBI can be found in Appendix D.1.

##### 4.6.2. *Social Problem Solving Inventory (Revised) (SPSI-R:S)*

This 25-item questionnaire measures an individual's ability to resolve problems in everyday life (D'Zurilla *et al.*, 2002). It provides a better understanding about how they typically resolve stressful situations and make effective decisions. The current study used the 25-item short version of the revised inventory. It uses a 5-point scale (0-4). It contains two adaptive



problem-solving dimensions (*Positive Problem Orientation* and *Rational Problem Solving*) and three dysfunctional dimensions (*Negative Problem Orientation*, *Impulsivity/Carelessness Style*, and *Avoidance Style*). In addition, the questionnaire returns a total score for social problem solving (referred to as *Social Problem Solving* in this thesis). The questionnaire has good psychometric properties. It is a valid and consistent measure. It has previously been used in research, which can be shown by entering the search item 'Social Problem Solving Inventory' using OVID databases (Medline, PsychInfo, Embase). This returned 125 studies that had used this measure since 1990. In research it is frequently used in student populations and the general population as well as adults with mental health problems. This measure has been used in relation to substance use with binge-drinking college students and smokers.

The questionnaire is copyrighted. For illustrative purposes only, a copy for an SPSI-R:S response sheet taken from the SPSI-R:S Manual (D'Zurilla *et al.*, 2002) can be found in Appendix D.2.

#### 4.6.3. *The Self-Liking/Competence Scale (Revised) (SLCS-R)*

This is a 16-item questionnaire of two-dimensional self-esteem measuring one's sense of self-worth/self-competence and self-efficacy (Tafarodi & Swann, 2001). In previous research, self-esteem was often assessed using uni-dimensional tools. Contemporary research has suggested that these constructs are multi-dimensional and has developed new tools in order to measure the concepts more effectively (Tafarodi & Swann, 2001). The current study proposes to employ this new multi-dimensional measure in order to assess the relevant issues in more detail. The measure employs a 5-point scale (1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4-agree, 5-strongly agree). This questionnaire therefore assesses two dimensions of self-esteem – *Self-Liking* and *Self-Competence*. Items include for example:

*Self-Liking*: 'It is sometimes unpleasant for me to think about myself.'

*Self-Competence*: 'I perform very well at many things.'

This is a relatively new questionnaire that was only published in 2001. When entering the search item 'Self-Liking Self-Competence' using OVID databases (Medline, PsychInfo, Embase), 22 studies were found that had used this measure since 2001.

In research it has been used in student populations and general population. It has also been used in adults with mental health problems. These include inpatients and outpatients with



psychiatric diagnosis. This questionnaire has not been used with a substance abusing population.

A copy of the SLCS-R can be found in Appendix D.3.

#### 4.7. Dependent Variables

##### 4.7.1. *Timeline Followback (TLFB) (modified)*

The Timeline Followback method is a measure of alcohol consumption, which uses a calendar method and other memory aids to collect retrospective drinking data over a certain amount of time (Sobell & Sobell, 1992, 1996). The participant's daily drinking patterns over the past week will be analysed. Filling in a retrospective drinking diary for the past week is also part of the standard admission process within the ward. Furthermore, drinking diaries are used by the local outpatient service to assess patients' alcohol consumption. *Quantity* and *Frequency* of alcohol consumption for the week prior to the study will be calculated using the information collected using an adaptation of the Timeline-Followback method. In addition to collecting information about the previous week, the participant can provide information about a typical drinking week should they feel the previous week was not a typical drinking week.

The TLFB method is a popular method of recording drinking behaviour in alcohol research. The search item 'Timeline Followback' using OVID databases (Medline, PsychInfo, Embase) returned 145 studies that had used this measure since 1990. In research it is frequently used in student populations and the general population as well as adults with mental health problems. This method has previously been used with a range of populations in relation to substance abuse, including untreated problem drinkers, hospitalised psychiatric patients with co-morbid major depression and alcoholism, college students with binge drinking patterns and teenagers with Alcohol Use Disorder.

A copy of the Time-Line-Follow-Back Drinking Diary used in the study can be found in Appendix D.4.

##### 4.7.2. *Alcohol Use Disorders Identification Test (AUDIT)*

This short, 10-item questionnaire measures the frequency and quantity of alcohol consumption, drinking behaviour and alcohol-related problems. It was developed by the World Health Organisation (Babor *et al.*, 1989) as a simple way of screening and identifying

people at risk of developing alcohol problems. It has good sensitivity and specificity for detecting harmful drinking. The questionnaire uses a 5-point scale (3-points on the last two questions). Scores above 10 are indicators of hazardous and harmful alcohol use, higher scores reflect greater severity of alcohol problems and dependence and a need for intensive treatment as well as alcohol-related harm already being experienced. Scores of 20 and more call for further diagnostic assessment for alcohol dependence (Barbor *et al.*, 2001). Referral criteria for the inpatient treatment programme state that patients needed to score  $\geq 20$  to be eligible for treatment within the local Alcohol Problem Service. An example for an Audit item would be: 'During the past year, how often have you needed a drink in the morning to get yourself going after a heavy drinking session?'

This free measure is popular as it is short and easy to administer. The search item 'Alcohol Use Disorders Identification Test' using OVID databases (Medline, PsychInfo, Embase) found 757 studies that had used this measure since 1990. In research it has been used in student populations and general population. It has also been used in adults with mental health problems. These include inpatients and outpatients with psychiatric diagnosis. Other populations where this questionnaire was administered with no noted adverse effects included young adults with alcohol problems who had attempted suicide as an adolescent, offenders who committed a violent offence while intoxicated, veterans with long-term spinal cord injury and substance abuse disorders and adult children of male alcoholics.

A copy of the AUDIT can be found in Appendix D.5.

#### 4.7.3. Alcohol Problems Questionnaire (APQ)

This 44-item measures the severity of alcohol problems (Drummond, 1990). Items relate to various problem domains: friends (4 items), marital (9 items), children (4 items), police (3 items), work (8 items), financial (4 items), physical (7 items) and psychological/affect (5 items). The domain *Friends*, *Financial*, *Police*, *Psychological/Affect* and *Physical* return the APQ *Common*, a total problem score that applies to everybody, whereas questions on children, marital and work were not applicable to everyone. The following statement is an example for the kind of questions asked by the APQ: 'Have you spent more time with drinking friends than other kinds of friends?'. The measure uses a forced choice *yes/no* response system, which makes it quick and easy to complete.

The search item 'Alcohol Problems Questionnaire' using OVID databases (Medline, PsychInfo, Embase) found 24 studies that had used this measure since 1990. The measure

was used in the UK Alcohol Treatment Trial (UKATT, 2008) study. Other studies used the APQ to measure health and social problems in their research, e.g. Kiritze-Topor *et al.* (2004) conducted a study that compared Acamprosate treatment with a control group. Heather & Dawe (2005) used the APQ with Australian and UK outpatients in alcohol treatment. In comparison with the other questionnaires, this measure is relatively rarely used.

A copy of the APQ questionnaire can be found in Appendix D.6.

#### 4.7.4. *Drinking History*

Additional *Historical Drinking* data were also recorded, which includes information that was not already captured by the other measures, like the age of drinking onset, the onset of drinking problems and familial alcohol problems. Participants were also asked to write down how much they drink per drinking session and how often they drink.

This questionnaire can be found in Appendix D.4.

#### 4.8. Additional Information

In addition to the above measures, *sociodemographic data*, including gender, age, marital status, usual occupation, occupational status was recorded at the beginning of the questionnaire battery. A copy of the demographic proforma can be found in Appendix D.7.

#### 4.9. Procedure

Prior to the study, ward staff within the alcohol problems inpatient unit were provided with background information to the study and received a copy of the participant information sheet. Furthermore, they were able to contact the principal investigator if they wished more information about the study. During the data collection period, ward staff screened all inpatients who attended the specialist inpatient unit for inclusion in the study. Inclusion and exclusion criteria were applied. Nursing staff involved in the patient's care invited the patients to take part in the study, informed the potential participants about the date of the principal investigator's visit and provided written information about the study in the form of the Participant Information Sheet. The information was handed out at least one day before the principal investigator's visit.

Most patients who attend the unit go through a detoxification process at the beginning of their hospital stay. Patients were not approached by the investigator during the detoxification phase. Only those medically fit and without psychological distress were approached for participation in the study. All patients that met inclusion criteria, whose detoxification process had been completed and who were present within the ward at the time of the principal investigator's visit were asked by the investigator if they would be willing to participate. Investigator's visits to the ward usually took place on the 4<sup>th</sup> or 5<sup>th</sup> day of the programme (so that similar recruitment conditions were assured for both the 6- and 12-day programmes).

The principal investigator pointed out to potential participants that participation was on a voluntary basis and refusal to participate did not affect their care at the unit or from the outpatient service after discharge. Patients gave written informed consent to participate in the study before they received a copy of the questionnaires. A private treatment room was available if participants wished privacy to complete the questionnaires. Participants were able to take the questionnaires to their bedroom and return them when they had completed them. Most participants, however, chose to complete the questionnaires in the common room of the ward. The principal investigator was present throughout the whole process and was able to answer queries and help with filling out the questionnaires.

The completion of the questionnaires took between 15-30 minutes, depending on the participant's reading and writing speed. A short pilot of the questionnaire completion time with five colleagues had revealed an average completion time of 12 minutes for all questionnaires.

#### **4.10. Data Entry and Analysis**

The raw questionnaire data were entered onto a computer using Microsoft Excel. Scores for individual subscales and total scores were calculated using Microsoft Excel. The data were cleaned and analysed using PASW Statistics 17.0. Missing data were treated as described in the section below.

Descriptive statistics and associations between individual variables (Pearson's  $r$  Correlations) were calculated before a series of regression analyses as described by Baron and Kenny (1986) were carried out to assess the role of mediating variables as postulated within the hypotheses of the study. If full mediation according to the Baron and Kenny

model was to be achieved, a more formal method of testing the influence of a mediator variable, the Sobel test, would have been used to confirm the mediation (Sobel, 1986).

#### *4.10.1. Missing Data*

On occasion, questionnaire items had been left blank or participants had apparently refused to fill out a particular questionnaire. This created missing data points. Therefore the number of valid cases is less than 90 for some measures.

To be specific, there were no missing data points on the PBI and the SLCS-R, the first two questionnaires within the battery to be filled in. One person only filled out the first two questionnaires (PBI and SLCS-R) and then discontinued. Apart from this one case, there were no further missing data points on the APQ, which was the third questionnaire to be filled in. Another two scores were missing on the Audit, and several items were missing on the SPSI-R as well as five people who had not filled out any of the items on the SPSI-R.

It was assumed that the occasional blank data points, which appeared to be at random, happened by error. However, apparent refusal to fill out the SPSI-R in addition to several missing data points on the SPSI-R is more likely to be related to poor questionnaire presentation. The SPSI-R was the only questionnaire which was copyrighted, had to be bought in and therefore its presentation could not have been changed.

Missing data creates difficulties calculating total scores for scales as they are mainly calculated by summing up the individual items belonging to that scale. Missing data would therefore create artificially low scores that do not appropriately reflect the participant's opinion, experience or feeling that is being measured. Therefore, the participants' average for the scale in question was calculated and the missing data point was replaced with this value.

In addition on the PBI, three of the participants' mothers and five fathers were not present when the participants were growing up. No other person was present in their lives who acted as a substitute for the role so therefore they did not fill in the particular part of the PBI. As a result this data appears as missing data.



## 5. Results

The significance level for all tests was set to  $\alpha = .05$ . All tests were 2-tailed.

### 5.1. Participation in the Study

Data were collected over the course of 15 treatment programmes - nine 6-day programmes and six 12-day programmes. Over these 15 programmes 124 inpatients had been admitted to the unit. Thirteen inpatients were excluded from taking part. Two male participants were identified by the ward staff as having suffered from some form of brain damage which excluded them from taking part in the study. A further male participant was identified as not having completed his detoxification and was therefore excluded from participation. Ten participants had previously taken part in the study and could therefore not take part again. These figures are summarised in Table 1.

Table 1. Study Participation Rate

	Number of Inpatients	Number of Inpatients excluded from taking part	Number of Eligible Inpatients	Number of Participants
Males	81	9	72	63
Females	43	4	39	27
Total	124	13	111	90

In total, 90 patients chose to participate in the study. This means 81.1 per cent of all eligible inpatients volunteered to take part. An average of 8.56 patients were taking part in the treatment programme when the principal investigator visited during the 6-day programme ( $SD=1.13$ ) and there were 7.83 participants on average ( $SD=1.17$ ) in the 12-day programme.

### 5.2. Testing for Normal Distribution of the Data

The distribution of the data was examined for normal distribution to ensure that assumptions for parametric testing were adhered to. Box and whisker plots were examined to reveal the nature of the distributions of independent, mediating and dependent variables and to check for extreme scores. In addition, the Kolmogorov-Smirnov test was carried out to check if the

distribution of the data differs significantly from that of a normal distribution. The results of these tests can be seen in Table 2 for the independent and mediating variables. All independent and mediating variables were found to be normally distributed and therefore parametric tests could be carried out.

Table 2. Descriptive Measures, Kolmogorov-Smirnov-Z-values (K-S-Z) and associated p-values for Independent and Mediating Variables

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>K-S-Z</i>	<i>p</i>
<i>Maternal Care</i>	87	9.57	3.99	1.09	0.183
<i>Paternal Care</i>	85	7.60	4.18	0.85	0.465
<i>Maternal Control</i>	87	5.83	3.00	1.13	0.158
<i>Paternal Control</i>	85	4.94	3.29	1.17	0.131
<i>Self-Liking</i>	90	16.24	7.30	0.73	0.664
<i>Self-Competence</i>	90	18.52	6.50	0.78	0.584
<i>Social Problem Solving (Total Score)</i>	84	8.49	3.44	0.71	0.697
<i>Positive Problem Orientation</i>	84	9.34	5.06	0.81	0.535
<i>Negative Problem Orientation</i>	84	12.70	5.43	0.87	0.432
<i>Rational Problem Solving</i>	84	9.51	5.07	0.79	0.563
<i>Impulsivity/Carelessness Style</i>	84	11.36	4.94	0.93	0.348
<i>Avoidance Style</i>	84	12.31	5.54	0.91	0.385

The results for the Kolmogorov-Smirnov test for the dependent variables can be viewed in Table 3. Only APQ *Common Score*, the *Audit* score and *Quantity* of consumption were found to have a normal distribution. *Frequency* of consumption and the domains of the APQ were not normally distributed and therefore parametric tests could not be carried out. Transformations are often used to convert data so they meet the assumptions of statistical inference or to explain the behaviour of variables using linear models. As a result of transformations, the data might follow a normal and symmetric distribution more closely and parametric data analysis can proceed. In this case the data were heavily skewed (to the problem drinking side). The variables *Frequency* and the five domains of the APQ were transformed using logarithmic (Lg 10 and Ln) and Square root transformations. Histogrammes were examined to reveal the nature of the transformed distribution.

Kolmogorov-Smirnov tests were then carried out again to check if the distributions of the transformed data differed significantly from that of a normal distribution (all Kolmogorov-Smirnov-Z values  $> 2.3$ ,  $p < 0.001$ ). Data transformation did not achieve the desired effect of attaining symmetry and normality in the data as the data were heavily skewed. Appendix E. shows the distributions of the variables *Frequency* and APQ domains. As a result the consumption measures and the various APQ domains (apart from APQ *Common*) will be excluded from further analysis and model testing.

Table 3. Descriptive Measures, Kolmogorov-Smirnov-Z-values (K-S-Z) and associated p-values for Dependent Variables

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>K-S-Z</i>	<i>p</i>
<i>APQ Common</i>	88	16.68	3.49	1.25	0.089
<i>Friends Domain</i>	88	3.13	0.89	2.19	<0.001
<i>Police Domain</i>	89	1.31	1.00	1.82	0.003
<i>Finances Domain</i>	89	2.36	1.55	1.99	0.001
<i>Affect Domain</i>	89	3.82	1.23	2.19	<0.001
<i>Physical Domain</i>	89	6.00	1.01	2.28	<0.001
<i>Frequency of Consumption (TLFB)</i>	89	6.70	0.97	4.71	<0.001
<i>Quantity of Consumption per week (TLFB)</i>	88	208.75	117.03	1.26	0.084
<i>Audit</i>	89	32.65	5.27	0.81	0.527

### 5.3. Descriptive Statistics for the Sample

Means and standard deviations were calculated for the main descriptive, independent, mediating and dependent variables for the participants from the 6- and the 12-day programmes. In addition, t-tests and Mann-Whitney-U tests were carried out to discover if there were any differences between the two groups. These tests were only carried out for the main variables in order to keep the number of group comparisons low. No significant differences were found between the participants of the 6-day and 12-day programmes. The means, standard deviations and t-test results can be found in Table 4 below. As the data for Frequency of Consumption were skewed, the most appropriate statistical test was Mann-Whitney-U, however, no differences were found for Frequency of Consumption ( $U=870.5$ ,  $z=-0.62$ ,  $p=0.535$ ).

Although 13 comparisons were carried out at this stage, it was decided not to adjust the p-value. Bonferroni adjustments of p-values, would be mistaken in this case because it is a more conservative position to accept the possibility of increased levels of type 1 errors (Perneger, 1998). If the p-value was corrected, possible differences between the two groups would be much harder to detect. As a result the 6- and 12-day groups would be regarded as the same, when in fact, they may have differed on several variables.

Table 4. Descriptive Statistics for the 6-day programme (n=58) and 12-day programme (n=32)

	<i>6-day programme</i>		<i>12-day programme</i>		<i>t-test</i>	
	Mean	SD	Mean	SD	<i>T</i>	<i>p</i>
<i>Age</i>	43.05	7.87	42.91	10.03	.076	.94
<i>Frequency of Drinking in days per week (TLFB)</i>	6.68	1.09	6.72	.73	n/a	n/a
<i>Quantity of Drinking in units per week (TLFB)</i>	216.05	113.81	195.97	123.27	.77	.44
<i>AUDIT</i>	33.12	5.29	31.81	5.21	1.12	.27
<i>APQ Common</i>	17.04	3.48	16.06	3.47	1.26	.21
<i>Age first 'got drunk' in years</i>	15.47	4.56	15.53	3.90	-.07	.95
<i>Maternal Care</i>	9.74	4.16	9.27	3.69	.52	.60
<i>Paternal Care</i>	7.76	4.29	7.32	4.05	.46	.65
<i>Maternal Control</i>	6.04	2.96	5.43	3.08	.89	.38
<i>Paternal Control</i>	5.22	3.45	4.45	2.98	1.04	.30
<i>Self-Liking</i>	15.98	7.60	16.72	6.80	-.46	.65
<i>Self-Competence</i>	18.52	7.22	18.53	5.06	-.01	.99
<i>Social Problem Solving (Total)</i>	8.23	3.72	8.95	2.91	-.92	.36

#### 5.4. Descriptive Statistics and Comparison with Normative Data

Means and standard deviations were calculated for all independent, mediating and dependent variables and compared to normative data from previous studies which have used the same measures. Overall, the current group was similar in their scores to other clinical groups and significantly worse than non-clinical student groups. The tables of the descriptive data and the results for the comparisons can be found in Appendix F.

Most notably, participants' alcohol consumption was compared with that of social drinkers (Finnigan *et al.*, 2005). A comparison of the means for social drinkers' and alcohol-dependent participants' quantity and frequency of consumption showed that the current group drank significantly more units of alcohol per week on more days per week than the social drinkers (Appendix F.8).



### 5.5. Correlational Analysis

The main hypotheses, i.e. the relationships between the independent and dependent variables, were tested first. Pearson's  $r$  was calculated to analyse the relationships. All significant correlations were of medium to small size. The testing of the main hypotheses required 44 statistical tests to be carried out. The problem of multiple comparisons arises in this case. Multiple comparisons affect the significance level of the whole family of tests. To maintain the familywise error rate at  $\alpha=0.05$ , corrections for the number of tests carried out need to be made. The most popular method for correcting for this is the Bonferroni method.

Such corrections have been much debated in the literature (e.g. Bender & Lange, 1998; Perneger, 1998). One argument is that corrections control the probability of producing *false positives* at the cost of increasing the likelihood of producing *false negatives*, which means that the power of the study will be reduced. Bonferroni corrections in general are regarded as too conservative; for example in the present study applying the correction in full would result in an alpha level of 0.00114, making it difficult to detect any real effects. The issue of Bonferroni correction is further clouded in this case by correlations between the variables, i.e. the variables in this study are not independent from each other (being subscales of the same questionnaire and correlations between some of the measures have previously been shown). However, Bonferroni corrections assume that the tests are independent of each other.

There is no method for dealing with multiple comparisons that is universally accepted (Nakagawa, 2004; Perneger, 1998). Various methods for correcting the error rate have been discussed in the literature and there is an ongoing debate (e.g. Olejnik *et al.*, 1997). One way of dealing with the problem is to arrange hypotheses into a hierarchy, where it is acceptable to apply no corrections to primary hypotheses, where clear and explicit predictions have been made, but the correction is applied to hypotheses and aims lower down the hierarchy. Another alternative approach is to control the rate of false positives and to follow-up the results with further experiments or studies to detect the false positives (McDonald, 2009). One such technique was developed by Benjamini and Hochberg (1995). When using this technique,  $Q$  as the false discovery rate is set to a certain value (e.g. 10%,  $Q=0.10$ ) and  $m$  is the total number of all tests carried out.  $P$ -values for all tests are ranked from smallest to largest. The rank of the  $p$ -value is  $i$  (starting with the smallest  $p$ -value,  $i=1$  etc.). All  $p$ -values for which  $p < (i/m)Q$  is true are significant.

As Bonferroni corrections produce a high rate of false negatives, therefore making it very difficult to detect moderate sized differences, many authors have argued against correcting

for multiple comparisons at all (Perneger, 1998; Rothmann, 1990). Rothman speaks of 'the paradox of paying a penalty for having more information' (Rothman, 1990, p. 46). Furthermore, he goes on to say that science consists of a multitude of comparisons but this should not lead to alarm (Rothman, 1990). Nakagawa (2004) confirms that researchers who do more detailed research, are less likely to be able to report significant results. He contemplates that although the application of Bonferroni procedures makes research papers more publishable in the short term, they also contribute to a publication bias. He even goes as far as suggesting that for this reason Bonferroni procedures prevent scientific progress and an increase in knowledge. He concludes that the use of Bonferroni procedures should be discouraged.

Other authors have argued for a tempered approach to using them (McDonald, 2009). McDonald (2009) suggests weighing up the costs of a high false negative rate and an increased probability of detecting false positives for each individual case. In this study, it would be too conservative to apply corrections for multiple testing to these because as noted above it is unlikely that significant correlations would result given the number of analyses carried out in this study. The resulting increased likelihood of false positives in this study by not carrying out any corrections requires a cautious approach to the findings of this study and the need for further enquiries regarding their validity. As the main purpose of this study is of an exploratory nature, any results that arise from the study need to be replicated in the future; the cautious approach to the results is therefore already a requirement. Two points support this approach. Firstly, when controlling the false positives rate at 10% using the Benjamini and Hochberg (1995) procedure, all significant correlations retain their significance after adjustment. Secondly, later analyses within this study indicated the predictive power of the included variables in regression equations, although no corrections had been applied to the initial exploratory correlation analyses. This justifies their inclusion despite the fact that they would not have maintained significance after Bonferroni correction.

#### 5.5.1. *Correlations between Independent Variables and Dependent Variables*

Table 5 shows the correlations between the PBI and alcohol problems. *Maternal Care* was negatively correlated with APQ *Common* (Total Score), which is a general measure of alcohol problems. This means that the less care participants received from their mothers, the higher their alcohol problems were. However, no causal conclusions can be made. Furthermore, Maternal Control was significantly positively correlated with alcohol problems, as indicated by the APQ. This means that the more controlling participants perceived their

mothers, the bigger their alcohol problems were. *Paternal Care* and *Paternal Control* showed no significant relationships with *APQ Common* or the *Audit*.

Table 5. Correlations between PBI subscales and Alcohol Problems, n=83

	PBI subscales			
	<i>Maternal Care</i>	<i>Paternal Care</i>	<i>Maternal Control</i>	<i>Paternal Control</i>
<i>APQ Common</i>	-0.23*	-0.10	0.20	0.10
<i>Audit</i>	-0.21	-0.20	0.26*	0.16

\*p<0.05, \*\*p<0.01

Table 6 shows significant negative correlations for *Social Problem Solving* (SPSI-R:S Total Score) with the *APQ Common* (Total Score). This means that the better participants were able to solve their problems, the less alcohol-related problems they reported. *APQ Common* also showed significant positive correlations with *Negative Problem Orientation*, *Impulsivity/Carelessness Style* and *Avoidance Style*. All three are dysfunctional styles of problem solving, i.e. the higher the participants' negative problem orientation was or the more they acted on impulsivity or avoidance, the greater their alcohol-related problems were. The same pattern was revealed through significant correlations with the *Audit*.

Table 6. Correlations between SPSI-R:S subscales and Alcohol Problems, n=82

	SPSI-R:S subscales					
	<i>Social Problem Solving</i>	<i>Positive Problem Orientation</i>	<i>Negative Problem Orientation</i>	<i>Rational Problem Solving</i>	<i>Impulsivity/Carelessness Style</i>	<i>Avoidance Style</i>
<i>APQ Common</i>	-0.40**	-0.19	0.30**	-0.03	0.36**	0.44**
<i>Audit</i>	-0.36**	-0.18	0.31**	-0.01	0.29**	0.38**

\*p<0.05, \*\*p<0.01

Table 7 shows that there are no significant relationships between alcohol consumption and the PBI dimensions. This means that the care or control participants received from their parents has not shown any systematic relationship with how much they drank. No significant relationships between alcohol consumption and the dimensions of *Social Problem Solving* were found, as shown in Table 8. No aspect of how participants solve their problems has shown any systematic relationship with how much or how often they drink.

Table 7. Correlations between PBI subscales and Alcohol Consumption, n=83

	PBI subscales			
	<i>Maternal Care</i>	<i>Maternal Control</i>	<i>Paternal Care</i>	<i>Paternal Control</i>
<i>Quantity of Drinking (TLFB)</i>	0.12	0.07	0.05	0.08

\*p<0.05, \*\*p<0.01

Table 8. Correlations between SPSI-R:S subscales and Alcohol Consumption, n=83

	SPSI-R:S subscales					
	<i>Social Problem Solving</i>	<i>Positive Problem Orientation</i>	<i>Negative Problem Orientation</i>	<i>Rational Problem Solving</i>	<i>Impulsivity/Carelessness Style</i>	<i>Avoidance Style</i>
<i>Quantity of Drinking (TLFB)</i>	-0.04	-0.01	-0.11	-0.01	0.12	0.12

\*p<0.05, \*\*p<0.01

### 5.5.2. Correlations between Independent Variables and Mediating Variables

Table 9 shows the correlations between the PBI and mediating variables. The mediating variable *Self-Liking* shows significant positive correlations with the independent variables of *Maternal Care* and *Paternal Care*. This means that the higher the care they received from their mother or their father, the more they reported liking themselves.

The other mediating variable of *Self-Competence* also correlates positively with the independent variables of *Maternal Care* and *Paternal Care*. Again, the higher the care received from mother or father, the better participants felt about their own competence to deal with life's issues.

Table 9. Pearson's Correlations between PBI subscales and SLCS-R subscales, n=85

	PBI subscales			
SLCS-R subscales	<i>Maternal Care</i>	<i>Paternal Care</i>	<i>Maternal Control</i>	<i>Paternal Control</i>
<i>Self-Liking</i>	0.39**	0.27*	-0.14	-0.08
<i>Self-Competence</i>	0.42**	0.26*	-0.02	0.00

\*p&lt;0.05, \*\*p&lt;0.01

As shown in Table 10, the mediating variable *Self-Liking* shows significant positive correlations with the independent variable of *Social Problem Solving* and correlates negatively with *Negative Problem Orientation*. Meaning, the better the participants were able to solve problems or focus less on negative problems aspects, the more they liked themselves.

The other mediating variable of *Self-Competence* also correlates positively with the independent variables of *Social Problem Solving* and *Positive Problem Orientation* and correlates negatively with *Negative Problem Orientation*. This means, the better the participants were at problem solving or the more they focussed on the positive side of problems, they better they felt about their own abilities. If they focussed on the negative side of problems more, then their self-competence was low.

Table 10. Correlations between SPSI-R:S subscales and SLCS-R subscales, n=84

	SLCS-R subscales	
	<i>Self-Liking</i>	<i>Self-Competence</i>
<i>Social Problem Solving</i> (Total Score)	0.28**	0.37**
<i>Positive Problem Orientation</i>	0.21	0.30**
<i>Negative Problem Orientation</i>	-0.23*	-0.30**
<i>Rational Problem Solving</i>	0.09	0.21
<i>Impulsivity/Carelessness Style</i>	-0.19	-0.21
<i>Avoidance Style</i>	-0.21	-0.19

\*p&lt;0.05, \*\*p&lt;0.01



5.5.3. *Correlations between Mediating Variables and Dependent Variables*

Table 11 details the correlations of the mediating and dependent variables. The mediating variable of *Self-Competence* correlates negatively with *APQ Common*. The less the participants believed in their own abilities and competencies, the higher their alcohol-related problems were. *Self-liking* correlates negatively with the *Audit*, i.e. the higher the levels of harmful drinking the participants reported, the less they liked themselves. As there are no significant correlations between the dependent variables of alcohol consumption (i.e. no possible mediating models), no correlations between the mediating variables and alcohol consumption will be reported.

Table 11. Correlations between SLCS-R subscales and Alcohol Problems, n=88

	SLCS-R subscales	
	<i>Self-Liking</i>	<i>Self-Competence</i>
<i>APQ Common Score</i>	-0.10	-0.27*
<i>Audit</i>	-0.24*	-0.19

\*p<0.05, \*\*p<0.01

5.6. Building Models

In order to test the hypotheses postulated at the beginning of this study, it needs to be determined which variables inter-correlate significantly and therefore fulfil the basic requirements to test the proposed models. The main correlations were already examined and explained in the previous section. The following section will therefore build on these findings and show which possible models emerged as a result of the inter-correlations.

5.6.1. *Dependent Variables: Alcohol Consumption and Alcohol Problems*

No significant correlations were found between any of the variables and the dependent variables of alcohol consumption. These variables were therefore excluded.

Therefore this leaves only the *APQ Common* and *Audit* as dependent variables as they correlate significantly with some of the independent and mediating variables. As already discussed under 4.2., data on the domains of the APQ were not found to be normally distributed and therefore these variables had to be excluded from model construction. Model testing will therefore be carried without including the APQ domains.

5.6.2. Mediating Variables: SLCS-R

The APQ *Common* correlates significantly with the mediating variable of *Self-Competence*, whereas *Self-Liking* correlates with the *Audit*.

5.6.3. Independent Variables: PBI and the Resulting Models Involving PBI

*Maternal & Paternal Control* do not correlate significantly with *Self-Competence* or *Self-Liking*. Furthermore, *Paternal Care* does not correlate significantly with APQ or *Audit*. Only the independent variable of *Maternal Care* is therefore left. Hence, the only possible model that is left involves testing if the relationship between independent variable of *Maternal Care* and the dependent variables APQ *Common* is mediated by *Self-Competence*. This is shown in Figure 1. The correlations between the three variables for this model are shown in Table 12.

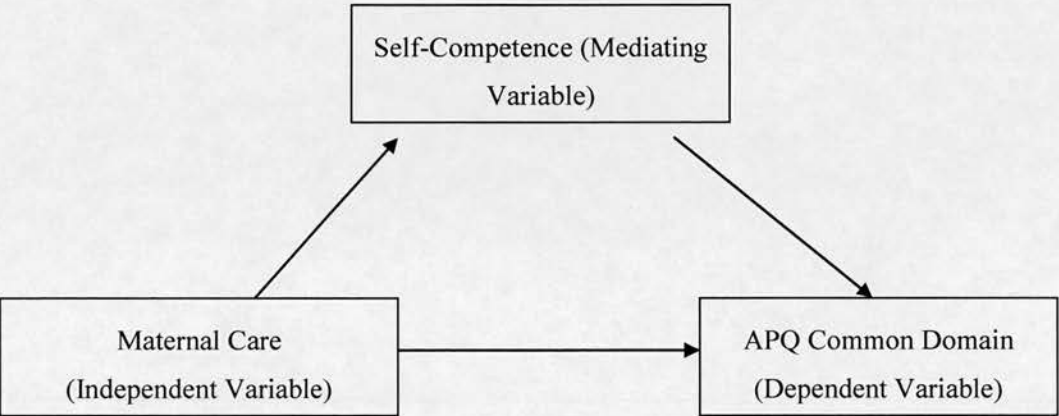


Figure 1. 1<sup>st</sup> Model showing the pathways between Maternal Care (PBI), Self-Competence (SLCS-R) and APQ Common

Table 12. Correlations between the Variables of Model 1

<i>Variable</i>	<i>Variable</i>	<i>Correlation</i>
Maternal Care (IV)	Self-Competence (MV)	0.42**
Maternal Care (IV)	APQ Common Domain (DV)	-0.23*
Self-Competence (MV)	APQ Common Domain (DV)	-0.27*

\*p<0.05, \*\*p<0.01

#### 5.6.4. Independent Variables: SPSI-R:S and the Resulting Models Involving SPSI-R:S

The SPSI-R:S Total Score (*Social Problem Solving*) as well as two subscales, *Positive Problem Orientation* and *Negative Problem Orientation* correlate significantly with *Self-Competence*. *Positive Problem Orientation* does not correlate significantly with any APQ Common. *Social Problem Solving* and *Negative Problem Orientation* correlate significantly with *APQ Common* and the *Audit*. Therefore four models can be built. They can be seen in Figure 2 to Figure 5. Table 13 to Table 16 show the correlations between the variables in these four resulting further models. Originally it was intended to examine one further model describing the relationship of the APQ domain *Psychological/Affect* and *Social Problem Solving* with *Self-Competence* as a mediator. However, as previously described, the data on the APQ domains (including APQ *Psychological/Affect*) were not normally distributed and assumptions for parametric testing had been fulfilled. For this reason, all APQ domains were excluded from model building and testing.

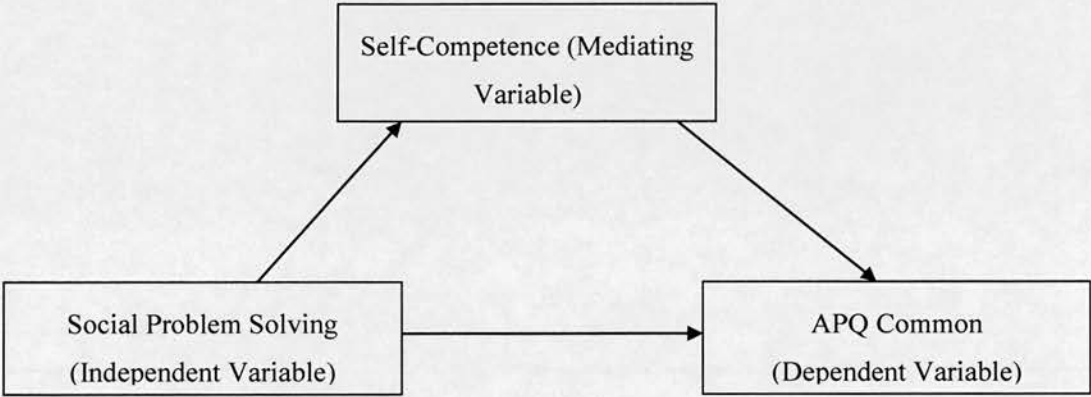


Figure 2. 2<sup>nd</sup> Model showing the pathways between Social Problem Solving (SPSI-R:S), Self-Competence (SLCS-R) and APQ Common

Table 13. Correlations between the Variables of Model 2

<i>Variable</i>	<i>Variable</i>	<i>Correlation</i>
Social Problem Solving (IV)	Self-Competence (MV)	0.37**
Social Problem Solving (IV)	APQ Common (DV)	-0.40**
Self-Competence (MV)	APQ Common (DV)	-0.27*

\* $p < 0.05$ , \*\* $p < 0.01$

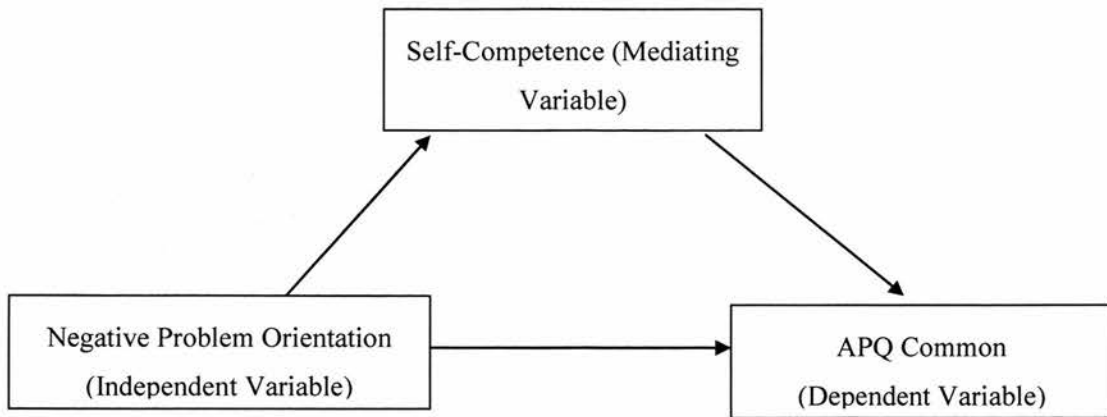


Figure 3. 3<sup>rd</sup> Model showing the pathways between Negative Problem Orientation (SPSI-R:S), Self-Competence (SLCS-R) and APQ Common

Table 14. Correlations between the Variables of Model 3

<i>Variable</i>	<i>Variable</i>	<i>Correlation</i>
Negative Problem Orientation (IV)	Self-Competence (MV)	-0.30**
Negative Problem Orientation (IV)	APQ Common (DV)	0.30**
Self-Competence (MV)	APQ Common (DV)	-0.27*

\* $p < 0.05$ , \*\* $p < 0.01$

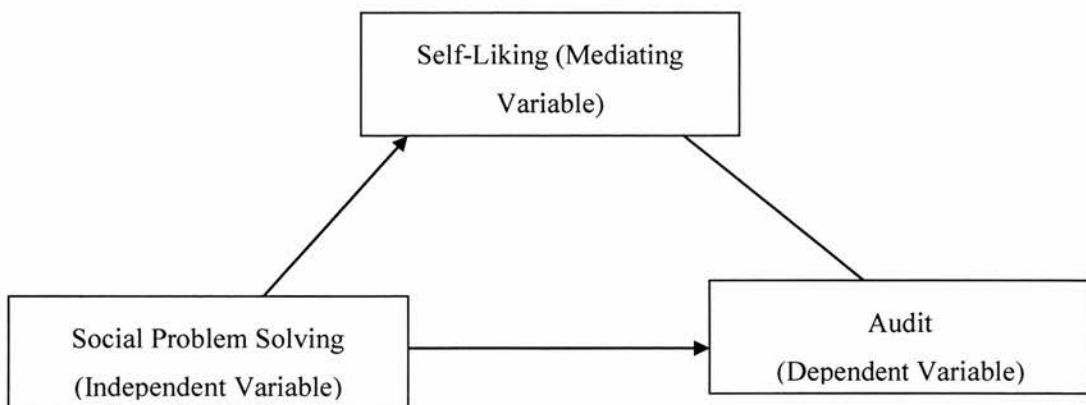


Figure 4. 4<sup>th</sup> Model showing the pathways between Social Problem Solving (SPSI-R:S), Self-Liking (SLCS-R) and Audit

Table 15. Correlations between the Variables of Model 4

<i>Variable</i>	<i>Variable</i>	<i>Correlation</i>
Social Problem Solving (IV)	Self-Liking (MV)	0.28**
Social Problem Solving (IV)	Audit (DV)	-0.36**
Self-Liking (MV)	Audit (DV)	-0.24*

\*p<0.05, \*\*p<0.01

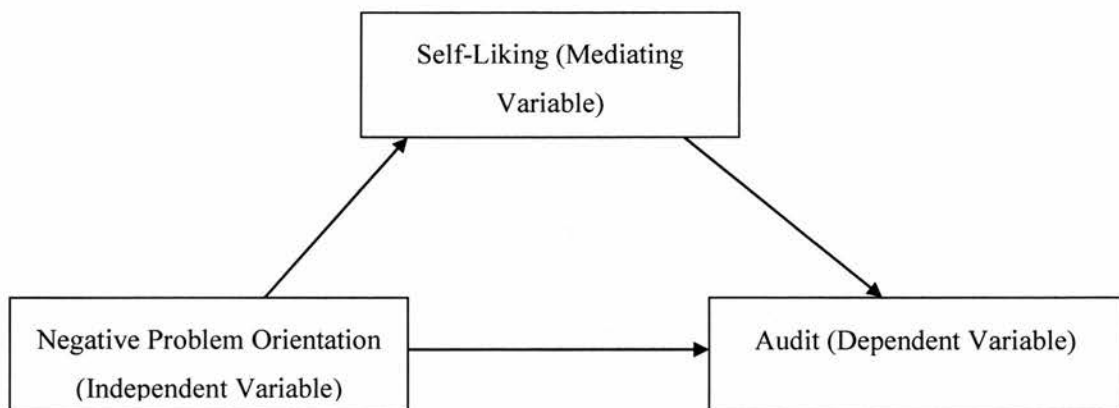


Figure 5. 5<sup>th</sup> Model showing the pathways between Negative Problem Orientation (SPSI-R:S), Self-Liking (SLCS-R) and Audit

Table 16. Correlations between the Variables of Model 5

<i>Variable</i>	<i>Variable</i>	<i>Correlation</i>
Negative Problem Orientation (IV)	Self-Liking (MV)	-0.23*
Negative Problem Orientation (IV)	Audit (DV)	0.31**
Self-Liking (MV)	Audit (DV)	-0.24*

\*p<0.05, \*\*p<0.01



### 5.7. Model Testing - Regression Analyses

Five possible models resulted from the significant correlations found in this study as proposed in the study's hypotheses. The role of the proposed mediating variables of *Self-Competence* and *Self-Liking* can now be tested using a series of regression analyses, as described by Baron and Kenny (1986), Judd and Kenny (1981) and MacKinnon and Dwyer (1993). Baron and Kenny postulated a series of requirements for the mediation model:

- (1) The effect of the independent variable on the dependent must be significant.
- (2) The effect of independent variable to the mediator variable must be significant.
- (3) The path from the mediator to the dependent variable must be significant.
- (4) In the last step, the effect of both independent and mediator variables on the dependent variable are tested at the same time. If the effect of independent variable on the dependent variable has diminished through the addition of the mediator to the model full mediation has occurred.

Figure 6 shows the first model, testing the role of *Self-Competence* as a mediator between *Maternal Care* and alcohol problems (*APQ Common*). When the effects of *Self-Competence* and *Maternal Care* on *APQ Common* were tested at the same time, no mediating effect was found.

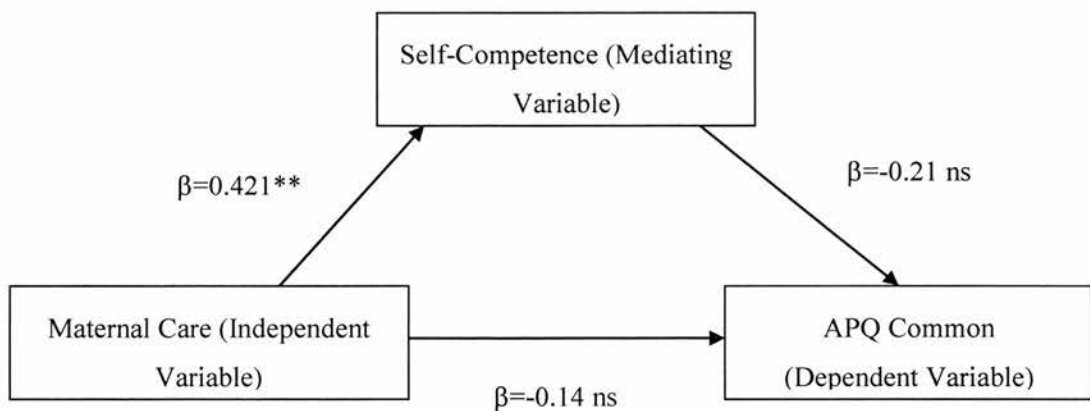


Figure 6. Standardised  $\beta$  coefficients of the pathways between Maternal Care, Self-Competence and APQ Common, \* $p<0.05$ , \*\* $p<0.01$ , ns=not significant

Figure 7 shows that *Self-Competence* does not exert a stronger influence on alcohol-related problems than *Social Problem Solving*, therefore no mediating effect was found.

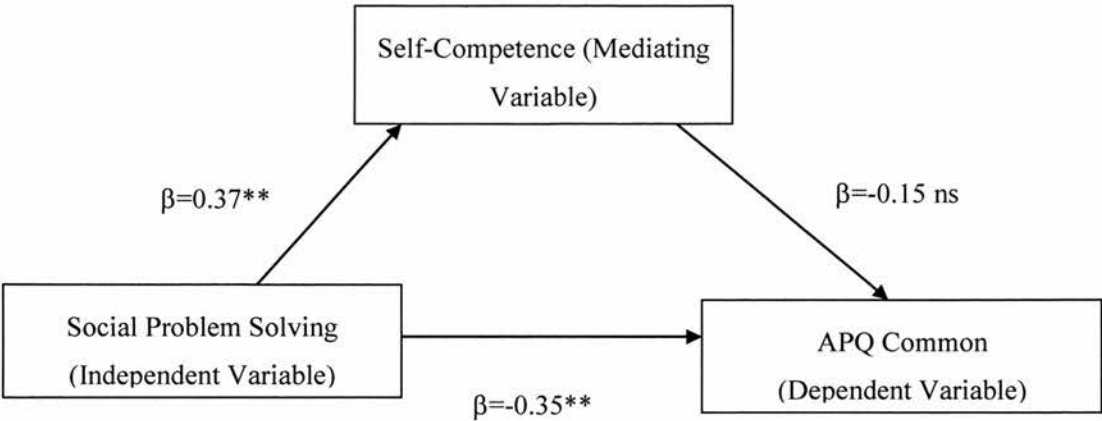


Figure 7. Standardised  $\beta$  coefficients of the pathways between Social Problem Solving, Self-Competence and APQ Common, \* $p<0.05$ , \*\* $p<0.01$ , ns=not significant

In Figure 8, the role of *Self-Competence* as a mediator between one aspect of social problem solving, *Negative Problem Orientation*, on alcohol-related problems is shown. No mediating effect was found when the effect of both variables on alcohol-related problems was tested.

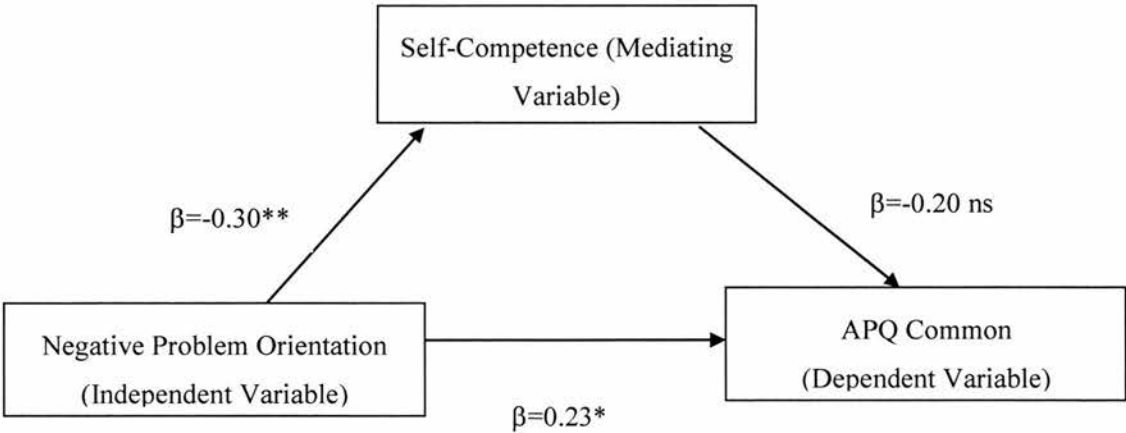


Figure 8. Standardised  $\beta$  coefficients of the pathways between Negative Problem Orientation, Self-Competence and APQ Common, \* $p<0.05$ , \*\* $p<0.01$ , ns=not significant

The role of *Self-Liking* as a mediator between social problem solving and harmful levels of drinking/alcohol-related problems was tested, as shown in Figure 9. *Self-Liking* did not exert a stronger influence on harmful levels of drinking/alcohol-related problems than *Social Problem Solving*, therefore no mediating effect was found.

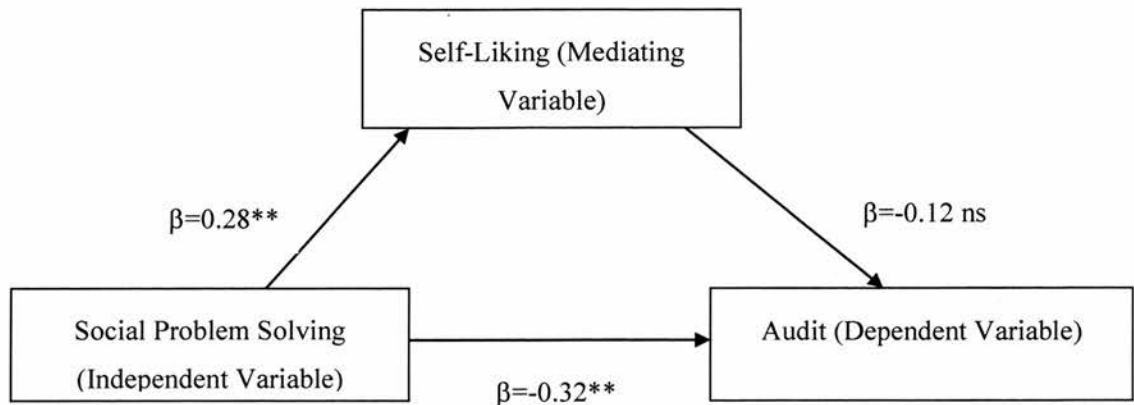


Figure 9. Standardised  $\beta$  coefficients of the pathways between Social Problem Solving, Self-Liking and Audit, \* $p < 0.05$ , \*\* $p < 0.01$ , ns=not significant

In the model in Figure 10, the role of *Self-Liking* as a mediator between one aspect of social problem solving, *Negative Problem Orientation*, on harmful levels of drinking/alcohol-related problems was tested. No mediating effect was found.

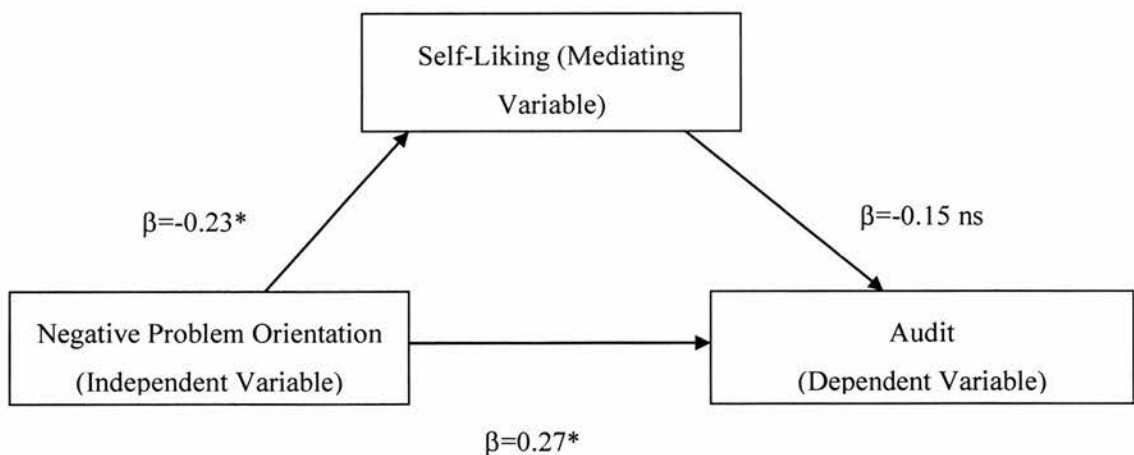


Figure 10. Standardised  $\beta$  coefficients of the pathways between Negative Problem Orientation, Self-Liking and Audit, \* $p < 0.05$ , \*\* $p < 0.01$ , ns=not significant

### 5.7.1. *Reverse Causal Effects*

Baron and Kenny (1986) further proposed to address the issue of possible confounding effects of multicollinearity. This is done by interchanging the mediating and depending variables and running the path analysis again. This determines if the dependent variable acts as a mediator between the other two variables, which would mean that the proposed mediation model could be less confidently accepted.

These analyses were carried out and relationships remained as they were, apart from the relationship between Negative Problem Orientation and *Self-Liking* became non-significant when alcohol problems (Audit) were controlled for ( $\beta=-0.184$ ,  $p=0.104$ ). As *Self-Liking* was not established as a mediating variable this outcome does not change the conclusions about the role of *Self-Liking*.

## 5.8. Family History of Alcoholism

Within the participant sample, 70 per cent of participants reported that someone in their family had previously suffered or was currently suffering from an alcohol problem. Thirty-seven participants reported that it was one of their parents, or both, who suffered from an alcohol problem (43%).

To examine these differences further, Table 17 explores the mean differences for the independent variables in this study between participants whose parents did not have an alcohol problem and participants whose parents did, using t-tests. Full Bonferroni corrections were carried out for these comparisons as these had not been predicted. Twelve comparisons were carried out; the resulting  $\alpha=0.0042$ . Mean differences were significant for the variables of Maternal and Paternal Care and Social Problem Solving (see Table 17).

Table 17. Group Means for Independent Variables for Participants' Parents with (n=37) and without Alcohol Problems (n=53)

	<i>Group Mean Parents without alcohol problems</i>	<i>SD</i>	<i>Group Mean Parents with alcohol problems</i>	<i>SD</i>	<i>t-values</i>	<i>p-values</i>
<i>Maternal Care</i>	10.86	3.38	7.76	4.08	3.85	0.000*
<i>Maternal Control</i>	5.76	2.78	5.95	3.33	-0.29	0.773
<i>Paternal Care</i>	8.63	3.41	6.03	4.57	2.99	0.004*
<i>Paternal Control</i>	5.13	3.23	4.69	3.43	0.59	0.558
<i>Self-Liking</i>	17.06	6.57	15.26	8.19	1.15	0.252
<i>Self-Competence</i>	19.46	5.91	17.33	7.16	1.53	0.129
<i>Social Problem Solving (Total)</i>	9.45	3.33	7.28	3.24	3.00	0.004*
<i>Positive Problem Orientation</i>	10.47	5.07	7.90	4.73	2.38	0.020
<i>Negative Problem Orientation</i>	11.61	5.81	14.09	4.62	-2.13	0.036
<i>Rational Problem Solving</i>	10.19	5.05	8.64	5.03	1.40	0.164
<i>Impulsivity/Care- lessness Style</i>	10.71	5.38	12.18	4.25	-1.36	0.177
<i>Avoidance Style</i>	11.10	5.90	13.85	4.70	-2.32	0.023

### 5.9. Age of Drinking Onset

As outlined in the introduction, there is evidence in the literature that the age of first alcohol consumption is related to the level of problems a person is experiencing. For this reason, the level of alcohol problems (as described by the APQ *Common*) was assessed in relation to the age at which the participant first 'got drunk' on alcohol. Table 18 shows the means for the APQ *Common* grouped by the age that the participants reported being intoxicated for the first time. In Figure 11 these data are visually presented. The earlier the person started drinking, the higher the level of general problems related to alcohol were reported by them.



Table 18. Means (and SD) for APQ Common by Age when Participant was first intoxicated

Age when first intoxicated	Mean APQ Common	SD
11	20.8	1.48
12	18.2	2.35
13	18.29	2.81
14	18	3.23
15	16.18	2.9
16	15.75	3.57
17	17.25	2.06
18	11.75	3.95
21	13	2.82

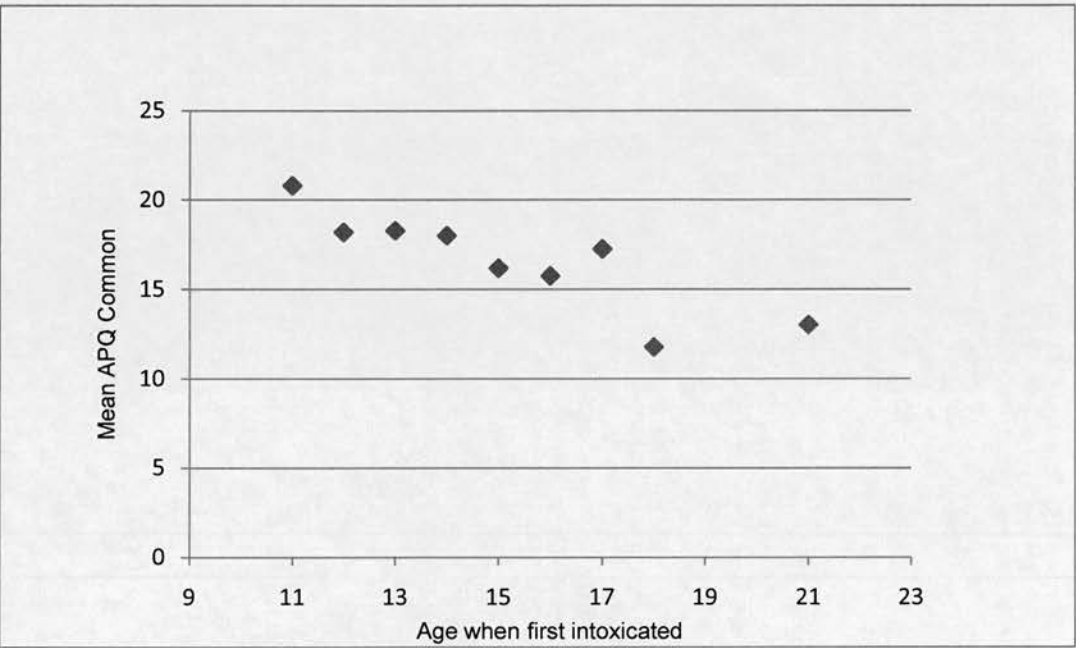


Figure 11. Boxplot Means for APQ Common by Age when participant was first intoxicated

The relationship between both variables appears to be of a linear nature. To test this, a linear regression analysis was carried out to determine the effect of *Age* of first intoxication (independent variable) on current level of drink-related problems (APQ *Common*-dependent variable). It was found that, for every year that the participants would start drinking later, alcohol-associated problems would decrease by 0.30 points on the APQ. The model was found to be significant ( $F[1,85]=14.03, p<0.001$ ). *Age* (of first intoxication) explained 14 per cent of the variance in drink-related problems (APQ *Common*).

#### 5.10. Summary of the Main Results

*Maternal Care* was negatively related with alcohol problems (APQ *Common*). *Maternal Control* was positively related to harmful drinking and alcohol problems revealed by *Audit* scores. Paternal Care and Control were not related to alcohol problems.

A significant negative relationship was found between Social Problem Solving and alcohol problems (APQ *Common* and *Audit*). A positive significant relationship was found between alcohol problems and the dysfunctional styles of social problem solving: *Negative Problem Orientation*, *Impulsivity/Carelessness Style* and *Avoidance Style*.

Both aspects of self-esteem were significantly related to maternal and paternal care as well social problem solving. Self-esteem was negatively related to one aspect of social problem solving (*Negative Problem Orientation*). *Self-liking* was negatively correlated with high levels of harmful drinking and alcohol problems and *Self-competence* was also negatively related to alcohol-related problems.

*Self-Competence* was not found to be a mediator in the relationship between *Maternal Care* and alcohol problems. Furthermore, neither *Self-Competence* nor *Self-Liking* were found to be mediators in the relationship of problem solving and alcohol problems, or more specifically *Negative Problem Orientation* and alcohol problems.

No significant relationship between alcohol consumption and parental bonding, or alcohol consumption and social problem solving was discovered.

## **6. Discussion**

### **6.1. Participation in the Study**

Participation rates in the study were high (81%). Potential participants were prepared for the investigator's visit and had received written information material about the study from the nursing staff in the ward. The investigator chose quiet periods between group sessions for the visits and approached all eligible patients personally. No reason for refusal had to be given. Potential rewards for the patients to participate included the attention and gratitude of the investigator, the feeling of having contributed to research and the discovery of new knowledge. Therefore the planning and preparation of the investigator's visits is likely to have contributed to high participation rates.

Exclusion criteria only applied in a small number of cases. This is related to existing referral criteria for admission to the programme. If patients are unwell they are unlikely to be suitable for the programme. Furthermore, if they continued drinking or taking illegal drugs, they would have been asked to leave the programme by the time of the investigator's visit (4th or 5th day of programme).

### **6.2. Demographics**

The majority of the participants in this study reported being single (42%); 22 per cent were divorced; 10 per cent were married. A total of 78 per cent of participants had no significant partnership with someone in their lives. These figures were corroborated by 65.6 per cent of participants reporting to live by themselves. These figures mean that at least two out of three participants live by themselves and have no partner or close family in their lives.

The General Register Office for Scotland (GROS) estimated the proportion of married people to be 41 per cent in 2008 in Scotland, the proportion of people who are divorced was estimated at 6 per cent and the proportion of single people was estimated at 50 per cent (GROS, 2009). From council tax records GROS reported that in 2009 38 per cent of dwellings in Scotland were occupied by only one adult. Although the figures for single people are similar to those in this study, the high rates of divorce, living alone and low rates for marriages suggest that few participants have good support networks from family and partners. The high figures of divorce and low marriage rates could also point to difficulties in building or maintaining close relationships. This could be an effect of heavy drinking, or it could be the underlying reason, but it is likely that alcohol has played a role in some way as this figure appears to be unusually high.

In addition, the majority of participants (48%) have no employment and therefore rely on some form of social benefits. In comparison, the Scottish Government reported 8 per cent of unemployment in the first months of 2010. Again, the proportion is high in comparison with official statistics. Cause and effect of this could be debated but it is likely that alcohol had played a role in this high figure. Approximately every sixth participant (15.6%) was employed.

Only one quarter lived with their children but this was often also to do with the fact that the children were grown-up and had left home. Three quarters of the participants who did not live with their children saw their children regularly. This means, however, that there are still roughly one in five participants with children who do not have regular access to them. Child protection concerns and/or acrimonious relationship break-ups are likely to be among the reasons for these participants not having access to their children. Alcohol is likely to have played a significant role in the development and maintenance of this situation.

### 6.3. Alcohol Consumption

In the current study participants reported consuming on average 208.8 units of alcohol per week (SD= 117.0) on 6.7 drinking occasions (SD=1.0) using the Timeline-Followback method, or 30.0 units on average (SD= 16.2) in one typical drinking occasion. In an epidemiological survey of British households, Farrell *et al.* (2001) defined 'very heavy drinking' as consuming  $\geq 36$  units/week for women and  $\geq 51$  units/week for men. Using these criteria, all of the participants would be classed as very heavy drinkers. Comparing these figures with drinking data previously gathered from social drinkers using the same methodology (Finnigan, Schulze, Smallwood & Helander, 2005), it was shown that the participants in the current study consumed significantly more alcohol and drank significantly more often than the non-dependent social drinkers. This result is not particularly surprising given that the participants were admitted to a treatment programme; however, it confirms that the participants differ significantly from social drinkers in their drinking behaviour. Interestingly, Farrell *et al.* (2001) found that 5 per cent of the British population were drinking heavily but heavy drinking was not synonymous with dependence; only 34 per cent of the heavy drinkers were diagnosed as alcohol dependent, using ICD-10 criteria.

The mean AUDIT score in this study was 32.65 (SD=5.27); referral criteria stated that patients needed to score  $\geq 20$  to be eligible for treatment within the local Alcohol Problem Service. The AUDIT Manual states that scores above 10 already indicate hazardous and harmful alcohol use (Barbor *et al.*, 2001). Apart from two participants who scored lower

(total scores 16 and 17) than postulated by the referral criteria, all participants fulfilled this criterion and have scored high on the Audit, indicating not just high levels of harmful drinking among participants but greater severity of alcohol problems and dependence as well as alcohol-related harm already being experienced, all of which reflecting a need for intensive treatment.

In addition, participants' scores on the APQ also indicated high levels of alcohol-related problems. The various domain scores were compared with those reported by Williams and Drummond (1994) whose participants were inpatients and outpatients in various UK treatment centres. The APQ *Common* score from Williams and Drummond's study was significantly lower than that of participants from the current study, indicating more severe alcohol problems in the current group. At closer inspection this difference is found in the physical problems associated with drinking, which were experienced more by the current group.

Overall, it can be concluded that participants in the current study all drank at harmful levels and reported considerable levels of alcohol-related problems.

#### **6.4. The Relationship between Parental Bonding and Alcohol-related Problems**

*Maternal Care* was negatively related with alcohol problems (APQ *Common*). This means the less maternal care the participants had received, the higher their general alcohol problems. The null hypothesis 1.a will be rejected. *Maternal Control* was positively related to *Audit* scores, indicating that the more control was shown by participants' mothers, the higher their levels of harmful alcohol consumption and alcohol problems were. The null hypothesis 1.f will be rejected. As no other significant correlations were found for the PBI dimensions, the null hypotheses 1.b, 1.c, 1.d, 1.e, 1.g and 1.h will be accepted.

Considering that the scores for maternal and paternal care were found to be significantly different from those of a non-clinical group, this supports previous research in an alcohol-dependent sample, where parents had been reported being low in care (Joyce *et al.*, 1994). However, the relationship between paternal care and alcohol problems was not found to be significant. Furthermore, this finding is supportive of Enns *et al.*'s (2002) results, which had suggested that the influence of maternal bonding on psychopathology was stronger than that of paternal bonding. There have been suggestions in the literature that paternal control/overprotection might have a protective influence on alcohol use in males (Enns *et al.*, 2002; van der Vorst *et al.*, 2006). Although the current study did not find a significant



relationship between paternal control and alcohol use, a couple of points need to be considered. Firstly, previous studies were carried out with large population samples or student samples. Secondly, the scores for maternal and paternal control within this group did not differ from those of a control group. So if high paternal control was to have a protective influence on drinking then this would be reflected in higher scores for paternal control and better drinking outcomes. This makes it less likely that such a connection would be found within the current heavy drinking sample. Hence no conclusions about the protective influence of paternal control on drinking can be made from the current data.

#### 6.5. The Relationship between Social Problem Solving and Alcohol-related Problems

A significant negative relationship was found between Social Problem Solving and alcohol problems (as measured by APQ *Common* and *Audit*). Therefore the null hypotheses 2.a and 2.b will be rejected. A positive significant relationship was found between APQ *Common* and *Audit* and the three of the dimensions of social problem solving: *Negative Problem Orientation*, *Impulsivity/Carelessness Style* and *Avoidance Style*. All of them are dysfunctional styles of problem solving. The null hypotheses 2.g, 2.h, 2.i, 2.j, 2.k and 2.l will be rejected. . As no significant correlations for the positive dimensions of social problem solving were found, the null hypotheses 2.c, 2.d, 2.e and 2.f will be accepted.

Social problem solving has been studied poorly in the past in relation to drinking problems. Studies with students have shown that ineffective problem solving skills were related to higher alcohol consumption (Godshall & Elliot, 1997) and harmful drinking (Ramadan & McMurran, 2005). Although a relationship with *Quantity* of consumption could not be found in this study, a relationship between dysfunctional problem solving and alcohol-related problems and harmful levels of drinking has been shown.

#### 6.6. The Mediating Role of Self Esteem in the Relationship between Parental Bonding and Social Problem Solving

Self-esteem was found to be related to maternal and paternal care, as well as social problem solving. Both aspects of self-esteem were related to alcohol problems; *Self-liking* was negatively correlated with high levels of harmful drinking/alcohol-related problems (*Audit*) and *Self-competence* was negatively related to alcohol-related problems (APQ *Common*).

In student samples, drinking was only poorly predicted by self-esteem (e.g. Boden *et al.*, 2008). In alcohol-dependent samples, the link between self-esteem and drinking had only indirectly been established (e.g. Beckman, 1978). The current study has been able to show a negative significant relationship between both aspects of self-esteem and alcohol problems. Furthermore, the study supports the findings by Rangarajan (2008) that have shown that parental attachment was significantly related to offspring self-esteem. In particular, the current study emphasises the role of the care received from both parents for the child's self-esteem.

Kassel *et al.* (2007) had previously shown that self-esteem mediated the relationship between adult attachment styles and drug use. One aim of the current study was to find out if self-esteem would mediate the relationship between parental bonding and alcohol-related problems. The mediating relationships were postulated under points 3. and 4. of the hypotheses.

No models relating to the hypotheses under point 3. (parental bonding and alcohol problem mediated by *Self-Liking*) could be built. *Self-Liking* mediates none of the relationships; therefore all null hypotheses 3.a to 3.h will be accepted.

It was only possible to build one model relating to the hypotheses under point 4. The model was tested to investigate if *Self-Competence* mediated the relationship between *Maternal Care* and alcohol problems (APQ *Common*). The relationship between *Maternal Care* and alcohol problems was found to lose significance when *Self-Competence* was statistically controlled, however, *Self-Competence* did not reach significance within this model in predicting alcohol problems. Therefore the notion of *Self-Competence* as a mediator cannot be supported. All null hypotheses 4.a to 4.h will therefore be accepted.

Further four models were built relating to points 5 and 6 of the hypotheses, testing the mediating effect of *Self-Competence* and *Self-Liking* on the relationship between *Social Problem Solving* and alcohol problems (APQ *Common* and *Audit*), and more specifically Negative Problem Orientation and alcohol problems. Those relationships retained their significance when *Self-Competence* or *Self-Liking* was entered into the equation. This means that the self-esteem dimensions of *Self-Liking* and *Self-Competence* did not act as mediators in the relationship of problem solving and alcohol problems. All null hypotheses 5.a to 5.l and 6.a to 6.l will be accepted.

It appears that parental care, self-esteem and alcohol-related problems are all interconnected but the exact mechanisms through which the components are connected have yet to be established. Patock-Peckham and Morgan-Lopez (2007, 2009) suggested that parental

overprotection was linked to depression through the mediator of self-esteem, and that depression was predictive of alcohol problems. This explanation supports previous findings by Kendler *et al.* (2000) and Rae *et al.* (2002). Co-morbidity issues play an important role within this population and muddy the waters when it comes to exploring the links between the factors. A strong co-morbidity pattern has been found between alcohol problems and depression, with rates of 8-53% of treatment seeking patients also presenting with a major depression (Merinkangas & Gelernter, 1990). Intoxication and withdrawal from alcohol can cause depressive symptoms. However, such depressive symptoms are usually chronologically secondary to the onset of alcoholism and disappear with detoxification (Brown & Schuckit, 1988). Studies have not found high rates for primary depression in males; these appear more common in females (Hesselbrock *et al.*, 1985). The causality of whether depression caused drinking (the path suggested by Patock-Peckham & Morgan-Lopez) or drinking led to depression is therefore not clear. Further investigations are needed to shed light on these issues.

#### 6.7. A Possible Model based on Current Data

Figure 12 summarises the results of this study by indicating the significant correlations between the variables tested in this study. The following model is proposed as an outcome of the study.



## 6.8. Family History of Alcoholism

Another analysis revealed a significant difference in maternal and paternal care and social problem solving between participants with parents with alcohol problems and those without alcohol problems. The means for maternal and paternal care from participants with alcoholic parents are much lower than the means for the group sample; the means for participants whose parents did not drink excessively are much closer to the means from the non-clinical student sample. It appears that the significantly lower perceived care that the participants of this sample reported is connected to the high rates of alcoholism among their parents. This supports previous findings (Senchak *et al.*, 1995); the previous research did not find a relationship between paternal warmth and drinking behaviour either. Studies have implicated paternal (not maternal) alcoholism in later problems (Rangarajan, 2008; Senchak *et al.*, 1995). This was not investigated by the current study. Hops *et al.* (1990) also implicated parental alcohol use in poor abilities to solve problems and deal with life's issues. It is conceivable that parents with poor problem solving abilities will be less able to teach their children effective problem solving skills.

In summary, it appears that parental alcohol problems significantly affect their ability of showing affection to their children and having a close relationship with them (the *Care* aspect of parental bonding). In addition, parents' alcohol problems also appear to affect their children's ability to solve problems in later life effectively.

## 6.9. Parental Bonding, Social Problem Solving and Alcohol Consumption

No significant relationship between alcohol consumption and parental bonding was found. This means that the care and control received from both parents did not affect how much participants in this study consumed alcohol.

Furthermore, no relationship between alcohol consumption and social problem solving was discovered. This means none of the dimensions of Social Problem Solving affected how much alcohol participants in this study consumed.

When looking at mean values for drinking frequency and drinking quantity, it appears that most participants drink seven days a week consuming large quantities of alcohol. It is therefore not possible to drink more often and a 'ceiling effect' is reached by the participants. For this reason *Frequency* of alcohol consumption had already been eliminated from the analysis as the data were not normally distributed. Although drinking quantity is more spread out, it is very likely that a ceiling level has also been reached on an individual



level by the participants in terms of their physical health and financial abilities. Support for the idea that participants already drink at maximum levels comes from informal conversations the investigator had with participants within the ward. Participants often stated that they would drink as much as they could afford, or as much as they could get away with without their family noticing. One might not therefore expect to find systematic relationships with independent variables because correlations are attenuated when variables have a restricted range. Therefore using consumption measures at this heavy level of drinking as an indicator of psychological or physical functioning appears inappropriate.

#### 6.10. Absent Parents

The introduction presented some of the research findings about the effects of single-parent families on health outcomes. Research has shown that children from one-parent families have poorer health outcomes than their counterparts growing up with two parents (Mackay, 2005). According to Attachment theory, it is likely that the absence of participants' parents during their childhood and youth would affect the way they view themselves, relate to others and deal with stressful situations (as measured by some of the outcome measures of this study) .

No data on absent parents were collected during the study. However, if participants felt unable to complete the PBI either for their mother or their father due to their absence, they left this section blank. Therefore omitted replies on the PBI are suggestive of parental absence, and this was classified as 'missing data'. It is possible that the effect of what was termed as 'missing data' might have been meaningful but this was not explored further. Although information on absent parents could have been gained indirectly through the fact that some participants did not fill out the PBI (the missing data), the issue could not be fully explored using this information only. There could have been several reasons for the omitted replies. Participants might have filled out the PBI because stepparents or grandparents filled the role of the absent parent (as per PBI instructions), even though it is likely that the absence of their parent still would have affected them. Furthermore, participants' parents might have only been absent for some of the time (due to temporary parental separation, illness, drug and alcohol abuse, jail sentence) but this would have still allowed the participants to fill out the PBI. Therefore, the fact of missing data itself does not allow conclusions about family structure and absent parents.

In the study, only three mothers and five fathers of a total of 90 participants had been absent during their child's first 16 years of life so that these participants felt unable to fill out the

PBI. These numbers are insufficient to allow any statistical analysis or to draw any meaningful conclusions. Although the effects of parental absence could have been profound on these individuals, such small numbers in the overall study are unlikely to have affected the overall results. In addition, previous research has concluded that parental absence per se has only a small to moderate effect on outcomes and that these differential outcomes are mediated by socioeconomic factors.

#### **6.11. 6-day and 12-day Treatment Programme**

The data in this study came from roughly one third of the participants in the 12-day programme and two thirds in the 6-day programme. Both programmes admitted the same ratio of females and males. The participant distribution within this study across 6-and 12-day programmes reflects the ratio of 2:1 in which the programmes are being run.

Before being admitted to a 12-day programme, patients usually complete the 6-day detoxification programme and should have stabilised or decreased their drinking or stayed abstinent for a period of time. It is important to note that data on periods of abstinence was not collected but in conversation the investigator was told by some participants that this had ranged from several days to several weeks. However, only some participants had achieved a period of abstinence and it was not a requirement for the admission to the 12-day programme. If participants had achieved a period of abstinence, the data on quantity and frequency of drinking related to drinking before abstinence. Therefore no conclusion can be drawn if patients in the 12-day programme had significantly reduced the amount they drunk before their hospital admission. Means for quantity and frequency of drinking between both programmes were not statistically significant. Therefore participants in the 6-and 12-day programmes did not differ in their drinking before engaging in treatment. From the data collected in the study no conclusions can be drawn on how much progress inpatients in the 12-day programme had already made by the time they were admitted. However, the study did not set out to achieve this.

Analyses using t-tests have shown no differences between the participants in the 6-and 12-day programmes on the main variables. Therefore it is justifiable to treat the data from participants from both programmes as one data set comprising of 'inpatients receiving treatment' and not to separate their data in the data analysis.

## 6.12. Gender-based Prevalence Rates

At the time of the investigator's visit, the female-male ratio in the ward was 1:1.88. The female-male ratio for participation was 1:2.33. It can be concluded that male and female participation rates roughly resembled the male and female ratio present within the ward.

To see if these prevalence rates are representative of the general population they can be compared with the prevalence rates found in other studies. Recent research has shown that incidence rates for substance use disorders are significantly greater among men (Grant *et al.*, 2009). Grant *et al.* (2004) studied prevalence rates of alcoholism using the data derived from two NIAAA surveys, each of which had surveyed more than 40,000 people: the National Epidemiological Survey on Alcohol and Related Conditions (NESARC, 2001–2002) and National Longitudinal Alcohol Epidemiologic Survey (NLAES, 1991–1992). Using DSM-IV (APA, 1994) criteria for alcohol abuse and alcohol dependence they have shown that the male to female ratios for alcohol abuse declined from 3.09 to 2.72 during the decade. They further showed that prevalence rates for alcohol dependence converged within the age groups, indicating that females have increasingly become alcohol dependent. The male to female ratio within the age groups 30–44 years was 2.46 in 1992–1992 and was 1.91 in 2001–2002. For the age group of 45–64 year olds it was 2.85 in 1992–1992 and 2.32 in 2001–2002. These results indicate that prevalence rates converge; it is therefore possible that they have further shifted in the last 8 years since the data were collected. In addition, the prevalence rates cited by Grant *et al.* apply to the U.S. population.

Farrell *et al.* (2001) report the findings from the British Psychiatric Morbidity Survey, which was a programme of epidemiological research on the prevalence of psychiatric disorders in the UK and gathering the data from over 10,000 adults. The sample was drawn to represent all of the UK, excluding the Highlands and Islands of Scotland. Using criteria of alcohol dependence from ICD-10 (WHO, 1992), they report alcohol dependence rates of 8 per cent for males and 2 per cent for females, i.e. a female-male ratio of 1:4. Even considering the previously suggested converging of prevalence rates, it appears that more females are admitted for alcohol problems in the local area than estimates from previously gathered data on national averages would suggest. However, this data simply reports prevalence rates and not treatment rates. It is possible that females either ask for help with their dependence problems more readily or they require help more quickly than men. The literature has shown that gender differences exist in the physiological, psychiatric and social impact of alcohol abuse (Sellers, 2005). It was found that males are more likely to develop alcohol dependence (Pettinati *et al.*, 2008; Wagner & Anthony, 2007) and this is reflected in the higher

prevalence rates for alcohol dependence in men in the epidemiological studies cited above. However, alcohol appears to have a different effect on females. It has been shown that the rate of alcohol metabolism and the effect of a unit of alcohol on total blood alcohol level in females are different to that of men (Graham *et al.*, 1998). These gender-based pharmacokinetic differences mean that women experience more side effects from drinking. As a long-term result, women show more severe medical complications when drinking the same quantity of alcohol within the same amount of time as men, which leads to accelerated disease processes as shown in brain damage, cardiovascular disease, alcoholic liver disease, breast cancer and osteoporosis (Sellers, 2005). Furthermore alcohol also affects female hormones and chronic alcohol use may lead to early menopause, amenorrhea or luteal phase dysfunction (Sarkola *et al.*, 1999). Results by Piazza *et al.* (1989) confirm the acceleration of the disease process; they described a decreased time interval between the age when alcohol is first consumed and when treatment is sought in women compared to men. Sellers (2005) proposes that males and females are subject to different social and cultural expectations and that these mediate the vulnerability to alcoholism and also affect access to treatment. Due to these various reasons, heavy alcohol consumption appears to affect females more quickly and more severely. This could contribute to females seeking help in the local inpatient treatment programme apparently more readily than men.

#### 6.13. Comparison with Normative Data on SPSI-R:S, PBI and SLCS-R

Means and standard deviations for all variables were compared with data from other studies where the same measures had previously been used. Problem solving abilities in the current sample were lower compared to male students and male prisoners. Alcohol-dependent participants and male prisoners were equally worse at rational problem solving but both groups performed worse than the students. Descriptive data for the PBI and SLCS-R were also compared; it can be concluded that alcohol-dependent participants reported having experienced low levels of maternal and paternal care in their childhood and youth. Furthermore, participants demonstrated low levels of self-liking and self-competence, indicating little belief in their own abilities and low regard for themselves. Having received low maternal care, having low self-esteem and poor problem solving abilities were all related to higher levels of alcohol-related problems. The role of paternal care, which has previously been related to alcohol problems, remains unclear as participants had received significantly lower paternal care than the student sample but no relationship with alcohol problems was found.



#### 6.14. Age of Drinking Onset

Participants stated that they consumed their first alcohol beverage at an average age of 14.9 years (SD=4.1) and first 'got drunk' at an average age of 15.5 years (SD=4.3). Therefore the first alcoholic drink is followed quickly by getting drunk for the first time. These figures were compared with data collected from social drinkers in a previous study (Finnigan *et al.*, 2005). No difference for age at first intoxication was found between the groups. However, participants did try their first alcoholic drink at a significantly different later age than social drinkers, contrary to expectations. Furthermore, the onset of problems (M=31.4 years, SD=9.8) was closely associated with the onset of drinking at heavy levels (M=31.5 years, SD=10.3).

The data collected in the current study confirmed that the earlier a person started drinking, the higher the level of general problems related to alcohol were reported by them. This relationship was found to be linear, in that for every year that the participants delayed starting to drink, alcohol-associated problems decreased by 0.30 points on the APQ. Age (of first intoxication) explained 14 per cent of the variance of drink-related problems.

It has been suggested that environmental factors are most predictive of initial alcohol exposure (and therefore first use) whereas environmental and genetic factors affect the development of dependence (Hingson *et al.*, 2006). This might explain the fact that the social drinkers from a previous study started drinking earlier than the participants from this study but did not go on to drink heavily or to develop alcohol dependence. It needs to be noted that the majority from the participants in this sample and the previous social drinking sample were much younger when they started drinking than the participants in much of the research on age of drinking onset. In summary, concerns about drinking alcohol at early ages have been confirmed by this study. Although onset of drinking age in itself does not determine the development of alcohol problems, it appears to affect the severity of alcohol problems should they develop later on.

#### 6.15. Methodological Considerations and their Impact on Research Findings

The current study used reliable and valid measures that have not previously been utilised in combination. Moreover, it set out to answer questions that had not been addressed in the literature before. Although sample size fell short for the original required estimates, it was reasonable given the limitations on the project and it proved sufficient for the analyses which



were ultimately used. Some additional methodological points that had already been considered from the outset of the study will now be considered in retrospective.

#### **6.15.1. Parental Alcoholism**

The study highlighted the role of parental alcoholism as an important early experience of people with alcohol problems. As reviewed in the introduction, some aspects of the effect of parental alcoholism has previously been researched. It is likely that parental alcoholism has effects on the ability of the alcohol-dependent individual to parent effectively. In addition to everyday practical parenting tasks, parental alcohol problems are likely to affect a parent's emotional availability to the child and therefore have lasting effects on the child's way to relate to their world. This has been shown by research, which found that parental alcoholism affected the child's adult attachment styles (El-Guebady *et al.*, 1993).

The data on parental alcoholism was collected by simply asking if family members had suffered from alcohol problems and if so, which family members. It was therefore a subjective judgement of the participants about their parents' and relatives' alcohol problems. It is therefore possible that their judgements were incorrect or they chose not to disclose a family history of alcoholism. A more formal method of assessing parental alcoholism, like the Children of Alcoholics Screening Test (CAST) (Jones, 1983) or the Mother- and Father-Short Michigan Alcoholism Screening Test (M-SMAST or F-SMAST) (Crews & Sher, 1992), would not only have provided more accurate data but would also have allowed to draw conclusions about the role of parental alcoholism in the development of alcohol problems in children of alcoholics.

#### **6.15.2. Co-morbidity and the Absence of Measures of Co-Morbidity**

Possible confounding factors might arise from co-morbid conditions experienced by inpatients. Co-morbidity refers to the presence of co-existing conditions (Baldacchino & Corkery, 1996) which produces greater impairment of function and poorer health than would be expected from one disorder on its own (Holland, 1999). Co-morbidity was not recorded within this study but a previous case note review within the treatment unit has suggested that the majority of inpatients are affected by other health and mental health issues. This is in line with other research. In a problem drinking population, Glass and Jackson (1988) showed that 30-40per cent of patients received an additional diagnosis. The long list of negative outcomes associated with co-morbidity issues leads to a decreased likelihood of sustained recovery from either condition and an increased risk of early mortality (Evans & Willey,

2000). Furthermore, it has been shown that co-existing psychopathology is the most consistent predictor of poor treatment outcome for people with substance misuse disorder (McLellan *et al.*, 1983; Schade *et al.*, 2003, Schneider *et al.*, 2001). A recent European study showed that concurrent alcohol use with a mood disorder was the most prevalent co-morbidity pattern (ISODORA, 2006). Other studies showed that high co-morbidity with affective and anxiety disorders predict poor outcome of alcoholism treatment (Schade *et al.*, 2003, Schneider *et al.*, 2001). Additionally, alcoholism is often associated with benzodiazepine treatment for withdrawal symptoms. However, there is a potential of overprescribing benzodiazepines past the acute withdrawal stage (Lejoyeux *et al.*, 2003). It seems clear that the specialist treatment unit is dealing with a complex client group where the majority of inpatients present with alcohol misuse and other co-existing health and mental health problems.

In addition, previous studies have suggested that depression was predictive of alcohol problems and that depression was linked to parental overprotection (e.g. Patock-Peckham & Morgan-Lopez, 2007, 2009). The literature suggests that a majority (8-53%) of treatment seeking alcohol-dependent patients also present with a major depression (Merinkangas & Gelernter, 1990). This data emphasises the extent of depressive co-morbidity issues within this population.

With these facts in mind, it would have been extremely helpful to include a mood measure, like the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) or Beck's Depression Inventory-II (BDI-II) (Beck, Steer & Brown, 1996), in the questionnaire battery, which would have provided data about the mood states of the participants. This would have allowed the additional investigation of the relationship between depression and alcohol problems within the context of parental bonding and would have allowed further investigation of the model and pathways suggested by Pattock Peckham (2007, 2009).

### 6.15.3. *Absent Parents*

The study did not asked explicitly about the absence of parents during participant's childhood and youth although this might have had profound effects on their social and emotional functioning. It is apparent from the missing data on the PBI that some participants' parents were absent during their childhood and youth to an extent that participants felt unable to fill out the PBI for the absent parent. It is possible that the effect of what was termed as 'missing data' might have been meaningful but was missed as it was neither recorded nor analysed. Moreover, there is a possibility that the absence of parents

might have had such a profound effect on these participants that the overall results were affected by this confounding factor.

It would have been extremely useful to ask questions about absent parents and family structure in some detail, such as information about parental absence due to death, divorce/separation, jail sentence as well as information about stepparents or significant other carers, like grandparents. Parental absence could have been controlled for in the analyses to minimise its effect as a confounding variable. Furthermore, this information might have allowed important conclusions about the effect of absent parents during childhood and youth on individuals' adult drinking behaviour and alcohol problems.

#### *6.15.4. Correlational Design and Comparison Group*

The study used a correlational design, which is known to be a weak research design (Aron, Aron & Coups, 2006). Results are never as clear as those produced by an experimental study as causality of the relationship cannot be determined and alternative explanations to the results are possible. Despite its limits, the correlational approach is often the most practical because it is relatively easy to carry out and cost-effective. These were important factors within the current study as virtually no funding was available. Furthermore, within the subject area of early childhood experiences it would be impossible to carry out experimental studies. However, the addition of a control group consisting of non-clinical participants would have added a valuable dimension to the study as it would have allowed direct comparison of the data. To a very small extent this was attempted by comparing the data from the current study to that from non-clinical data from other studies, which had previously used the same measures. However, besides concluding that the collected data were similar or different from that of non-clinical populations, no further inferences could be made. Collecting data sets from a non-clinical sample under the same circumstances as well as with the same questionnaire battery would have allowed to carry out the same analysis on the non-clinical data and comparisons could have been made and conclusions drawn.

#### *6.15.5. Social Desirability*

There is a possibility that factors of social desirability may have affected the report of alcohol use and associated problems. However, as the participants had already admitted themselves for treatment for alcohol problems, they are likely to have fewer hesitations to openly admit to their alcohol use and problems. In general, it was the investigator's

impression that participants were open about their alcohol use and were happy to give detailed information. In addition, they had been speaking about their difficulties with community staff, with their named nurse and during the group sessions so by the time they met the investigator speaking about alcohol had become a normal part of their treatment. Some participants appeared somewhat reluctant speaking about their relationship with their parents. Reassurance of anonymity and confidentiality of the data, however, seemed to make them more comfortable about giving this information. Although no specific observations were made, the same uneasiness might have applied to revealing parental alcoholism. Although it is possible that some participants might have withheld the information for social desirability reasons, the percentage of parental alcoholism within the group is high and it therefore likely that most participants disclosed the information correctly.

#### **6.15.6. *Issues around Self-Report and Subjective Measurements***

There are apparent problems with self-report measures that extend beyond issues of social desirability. For this reason, much has been argued about the best way of collecting reliable data on alcohol consumption and drinking history. Self-report measures rely on participants' willingness to provide the information as well as their ability to remember it. It has been shown earlier in this discussion that recalling any events from the past, e.g. alcohol consumption of past week, age of first drinking, relationship with parents etc., might be difficult for people whose memory is likely to have been affected by alcohol. It is therefore possible that people had difficulty in recalling these events. On the other hand, it is likely that people with alcohol dependence might be better able to remember, for example, the age of their drinking onset as they experienced negative consequences from drinking later on (Hingson *et al.*, 2006). Additionally, patients in treatment might have been asked about their drinking history several times before whereas someone without a drinking problem is less likely to have ever spoken about the age of drinking onset. As for the level of alcohol consumption, the Timeline Followback method did not suit the participants in treatment as they had not been drinking for five days by the time the data were collected. The previous week was therefore not a 'typical drinking week' and participants were required to give additional information on what would constitute a typical drinking week. Participants appeared to have little difficulty with this request as many of them had a typical type of and amount of drink that they consume. In addition, participants whose drinking pattern was more variable informally conveyed to the investigator that the choice was determined by external circumstances, such as available funds to buy alcohol.



Nevertheless, self-report measures of alcohol consumption have frequently been used in alcohol research for many years and are a valuable assessment method (Sobell & Sobell, 1992). Researchers tend to use self-assessment methods as biomarkers are more expensive, more difficult to access and there are difficulties with reliability and sensitivity (Allen & Litten, 2003). For example, most measures for detecting short-term alcohol use have a narrow window of assessment to be reliable. Blood sample analysis or breath testing both require measurements to be taken immediately after drinking. If drinking has continued for a longer time period, the blood alcohol peak might already have been missed. For measurement of alcohol metabolites in urine a sample of the first morning urine would need to be frozen for later analysis as testing can only be carried by certain laboratories. Blood markers for long-term alcohol use include MCV (mean corpuscular volume) and GGT (Gamma glutamyl transpeptidase). Elevated MCV and GGT levels are associated with alcoholism and can detect current heavy drinking. The sensitivity of these tests is variable and depends on many factors, including the date of the last drink, quantity of alcohol consumed, previous abstinences and relapses as well as age and gender but also other medication, drugs and health issues (Conigrave *et al.*, 2003; Dolan, 2001). The relationship between biomarkers and self-report measures is moderate but biomarkers are less sensitive than properly administered and well-standardized self-report measures (Allen & Litten, 2003). For these reasons the unreliability of biomarkers can only underline the importance of self-report data (Miller & Anton, 2004). However, biomarkers have been found useful when conveying the need to change drinking behaviour to patients as they provide 'hard evidence' about the damage that is being done by alcohol (Conigrave *et al.*, 2003; Dolan, 2001).

#### 6.15.7. *Difficulties with Questionnaire Completion*

Some difficulties with the completion of questionnaires were noted by the investigator. The Social Problem Solving Questionnaire (SPSI-R:S), already utilised in its short form, was the last questionnaire in the battery and presented the most difficulties. It is possible that some of this was due to fatigue effects. However, it appeared that the layout and lengthy wording contributed to participants making mistakes and to giving up before completion. This was the only questionnaire where items were left unanswered as participants had filled in some lines twice whereas the line before or after was left blank. As this questionnaire is copyrighted, no straightforward answer to the layout problem is possible. As for fatigue effects, it might have been better to present this questionnaire earlier in the battery. This, however, might have led to participants giving up much earlier in the process. On the other



hand, it should be stressed that the questionnaire, despite slight problems experienced by some participants, has been immensely useful as a whole and contributed significantly to the results of this study.

#### **6.15.8. Self-Esteem Definition and Measurement**

In previous research, treatment programmes have not been shown to have detectable effects on self-esteem or that any improvements are of a long-term nature (Trucco *et al.*, 2007). It is possible that the global construct of self-esteem does not capture the aspect that is related to alcohol consumption effectively. Even though this study measures two separate aspects of self-esteem, they might not be the right concepts. It is the most specific aspect of self perception – the expectancy of one's self efficacy that may be involved in abstinence or continued consumption (Trucco *et al.*, 2007). Additionally, there is variability in the definition of self-esteem and inconsistencies have arisen as a result. The term is often interchangeably used with 'self-efficacy' and 'self-concept' (Trucco *et al.*, 2007). The construct validity of self-esteem has been criticised despite good psychometric properties of the available scales (Winters *et al.*, 2002).

#### **6.15.9. Assessment of Alcohol Problems**

The Alcohol Problems Questionnaire was easy to fill out due to its straightforward *yes/no* answers but presented the investigator with methodological issues. As already discussed, many participants do not have partners or children and many of them have not worked for years. This made the three scales of the APQ relating to these items unusable. In retrospect, answers for these were not required from participants and these items could have been left out to make the questionnaire battery shorter. In addition, the five other domains of the APQ *Friends, Financial, Police, Physical* and *Affect* did not provide data that was normally distributed, owing to the small number of items per domain and the *yes/no* nature of the answers. Therefore the more detailed information provided by the domains could not be used in the formal analyses of the study. Most alcohol consumption or problem measures are designed for quick and easy use in a clinical setting to screen for harmful levels of drinking or alcohol problems. This makes it difficult to collect enough detailed information for research purposes. The Audit would be an example of such a questionnaire. Although the APQ was designed with research in mind and it attempts to provide the level of detail needed, its use was problematic in this study. Participants scored highly on most domains,

i.e. answered 'yes' to all questions on the domain. The ceiling level was reached on *Friends*, *Physical* and *Psychological* domains and therefore the APQ was not able to discriminate between participants' level of problems. APQ *Common*, however, was able to discriminate and provided a useful general score of participants' alcohol problems.

#### 6.15.10. Two Treatment Programmes – One Sample

No differences between 6-day and 12-day programme inpatients were found. A previous case note review found high completion rates for both programmes and the higher use of Clordiazepoxide in the 6-day programme (to assist detoxification), which suggest that referrals to the different programmes are made appropriately. It would have been useful to have more information on participants' periods of abstinence before coming to the 12-day programme. This is a small point though as it has been shown that whatever the actual difference in participants' recent alcohol consumption is, it had not affected their self-esteem or social problem solving (and it should not affect the reflections on parental bonding in any case).

Notwithstanding some of these methodological issues, the current study is the first to examine potential links between parental bonding, social problem solving, self-esteem and alcohol problems. The study suggests that a relationship between parenting styles and alcohol problems exists and emphasises the importance of the maternal role. It also implicates the dysfunctional aspects of social problem solving in the development and maintenance of alcohol problems.

#### 6.16. Clinical Implications

The results of this study have clinical validity as the research has been carried out using an NHS inpatient sample. These patients present to community and inpatient mental health professionals working in alcohol treatment settings in their day-to-day clinical practice. It is therefore useful to consider the impact of the results of this study on clinical practice.

This study was the first to explore the relationships between social problem solving, self-esteem, parental bonding and alcohol problems.

The study has shown that if someone used mainly dysfunctional problem solving styles, their self-esteem was likely to be low and their alcohol-related problems considerable. Dysfunctional problem solving strategies focus on the negative aspect of problems and are

less likely to achieve the goal of solving a problem. The adoption of functional problem solving strategies is therefore directly related to reports of fewer alcohol-related problems. The inpatient unit already provides group sessions which directly address problem solving. As a change from dysfunctional to functional problem solving styles is likely to lead to improvements in self-esteem as well as alcohol-related problems, problem solving strategies should continue to be targeted by treatment programmes. The focus on the negative aspects of problems seems of particular importance, as well as problem avoidance and an impulsive approach to problem solving and these should be addressed within treatment.

The effectiveness of teaching new problem solving strategies might be limited by brain damage that patients have acquired as a result of excessive drinking. The effects are often subtle but can still have significant effects on the patients' cognitive, emotional and behavioural functioning. It is important that treatment plans acknowledge the likelihood of the patient being affected by this and therefore adjustments must be made to the way the treatment is delivered.

Direct interventions to improve self-esteem are less likely to be successful as only a moderate relationship with alcohol problems was shown and this has also been indicated by other research in the past. Most studies were not able to establish a relationship between self-esteem and alcohol consumption. Drinking self-efficacy was not shown to be a predictor of treatment outcome (Lennings, 1996) nor did interventions lead to self-esteem increases (Malcolm, 2004). In addition, varying definitions of the global construct of self-esteem and their interchangeable use with 'self-efficacy' and 'self-concept' have led to confusions and criticism (Trucco *et al.*, 2007; Winters *et al.*, 2002). The clinical difficulties of capturing and improving the aspects of self-esteem are therefore understandable. Indirect ways to increase self-esteem are more likely to be successful. According to Pekala *et al.* (2009) self-esteem in alcohol-dependent individuals is best predicted by serenity and anger/impulsivity which suggests a connection of self-esteem to emotional regulation. For clinical practice, it seems therefore relevant to target the more deep seated problems that have led to emotional regulation problems that often occur in clients with alcohol problems. It appears that self-esteem increases should therefore only be viewed as a desirable side benefit rather than a direct goal of treatment.

The results have reaffirmed that the treatment unit is dealing with a heavy drinking population with complex social, psychological and physical problems. Furthermore, the importance of early parenting experiences was highlighted. Thorough assessment and formulation of patients' past experiences, as well as current difficulties and problems is

therefore clinically beneficial. The process of formulating and sharing this formulation with patients can have powerful effects on them. It has the potential to help them process their experiences and reflect on them, which can help them cope with their previous experiences and learn to deal with their problems in more effective ways in the future.

As the *Maternal Care* component of early parenting experiences was particularly implicated by this study as being related to later alcohol and self-esteem problems, this should be assessed and considered in the formulation and intervention. The process of psychological formulation and intervention can help patients to built on their own 'narrative' or 'reflective' skills or help them to develop these skills as they are often underdeveloped as a result of early attachment difficulties. The development in reflective functioning in therapy is facilitated in a secure and strong therapeutic relationship and therefore requires a longer-term developmental process (Fonagy et al., 2004). Developing of abilities of reflective functioning is likely to have positive effects on treatment outcome and future resilience.

Attachment difficulties are also known to lead to emotional regulation problems. As the average scores for *Maternal* and *Paternal Care* from this sample were significantly below that of a non-clinical comparison group, it is reasonable to assume that many of these patients suffer from emotional regulation problems. This is supported by the fact that alcohol is known and used for its depressant and numbing effects, which provides a strategy to avoid painful memories, thoughts or worries.

In addition to helping patients self-reflect and regulate their emotions, the therapeutic relationship in itself is of importance to the patient as it provides the experience of a positive attachment relationship. Consistency, stability and feeling contained within a relationship can be modeled within a therapeutic relationship and provide new, positive experiences to patients, which allows them to realize the possibility of new outcomes. Such an experience of a positive attachment relationship is also likely to increase the feeling of self-worth in the patient. However, it is crucial for services to invest in these relationships and to actively support them. It is important that patients are allowed sufficient time with their keyworker or therapist to build up a positive relationship, to be able to self-reflect and collaboratively formulate their difficulties and that this process is not disrupted by keyworker changes or time-limited therapy. Treatment is all too often focused on short-term goals, like detoxification, that might provide short-term relief but could ultimately lock the patient further into their customary maladaptive mode of behaviour because the causes of the behaviour have not been explored and addressed.



Another important point relates to the effect that parental alcohol problems have on children. As suggested by the results of the current study, parental alcohol problems affect the way children perceive their parents' (maternal and paternal) care and warmth towards them and affect their ability to solve problems as adults. In addition to acknowledging and addressing those issues from the past relating to patients' parents, it is important that alcohol services are aware of the children in the patient's life and possibly engage in interagency working to ensure the welfare of these children. As processing and making sense of the first important attachment relationships in the patients' life will be an integral part of their therapy, it is likely that patients will contemplate the effects of their own drinking on their children. However, self-doubts, shame and poor skills in self-reflection, problem solving and communication are likely limit the patients' creative responses and make it difficult to break out of maladaptive cycles. Therapy should offer a way to explore transgeneration processes, possibly employing experiential approaches. Preventing intergenerational transmission of alcohol and attachment problems seems an important investment for the future.

In their recommendation 'New Ways of Working for Applied Psychologists in Health and Social Care' (BPS, 2007), the British Psychological Society recommends the use of consultation provided by clinical psychologists for other mental health professionals in order to provide problem formulations to a wider group of clients. This opens up avenues for services which allow them to facilitate and encourage their keyworkers and nurses to formulate clients' problems and to take early experiences and wider background into account. Through formulation of the problems, staff are able to look at the deep seated roots for alcohol use as primary problems rather than solely focussing on alcohol use. In addition, consultation and supervision offers a way to support staff working with this client group and provides staff with containment so the staff can hold their patients as they gradually deal with their problems, self-doubts and fragile sense of self instead of repeating their destructive patterns in their relationship with their keyworker or therapist.

A final point relates to the study's finding of the relationship between the onset of first alcohol consumption and extent of later alcohol problems. It was found that the later a person consumed their first alcoholic drink, the less severe their alcohol problems. It is important to convey the message to young people, parents, teachers and others involved with the care of young people that experimenting with alcohol at an early age makes later alcohol problems more likely and more severe. At the same time it highlights the need for early recognition and early intervention of alcohol problems in teenagers. Teachers and those working with young people require training to recognise alcohol problems at an early stage and services for teenagers and young people with alcohol problems need to be available.



Services within the NHS are geared towards extremely heavy and experienced drinkers. Most services for young people with alcohol (or drug) problems are currently provided by the voluntary sector. Training, supervision and consultation should be offered to the voluntary sector by clinical psychologists so their staff can take a holistic approach to a young person's drinking problems (as outlined above) rather than solely focussing on reducing alcohol intake.

#### 6.17. Future Research

The findings of the study have answered many of the questions posed at the outset but new questions have also arisen. Multi-dimensional assessment of subjective responses was used to receive more detailed answers. On the one hand (Social Problem Solving) this strategy has paid off and valuable answers have been found. On the other hand (APQ) the use of a multi-dimensional measure has created additional methodological problems and the subscales were not able to provide more detail. It appears that much more effort needs to go into finding multi-dimensional measures for alcohol problems that accurately capture the problems and that do not produce ceiling effects in heavy drinking populations.

The results have highlighted the importance of early parenting experiences. It has not been the aim of this study to explore the effects of parental alcoholism on self-esteem, social problem solving and adult alcohol problems but the differences found in exploratory analyses between participants with alcoholic parents and those without them are encouraging for future research that more answers about the development of alcohol problems can be found when studying early environmental influences. Furthermore, the effect of absent parents has not been investigated by this study but in view of the theoretical backdrop of Attachment Theory, this would be an important issue to consider in future studies of this kind.

The extent of alcohol-related health problems in the Scottish population, the high cost to society and recent governmental initiatives to fight alcohol-related problems stress the need for identifying and treating alcohol-related disorders timely and appropriately. Clinical research into the psychological aspects of alcohol dependence can have important implications for early identification and subsequent treatment of alcohol dependence. Overall, it is clear that a better understanding of drinking behaviour is needed to put effective measures in place to prevent harmful alcohol consumption and associated social, physical and psychological problems.

#### 6.18. Summary of Main Findings and Conclusions

The results have highlighted that the treatment unit is dealing with a heavy drinking population with complex social, psychological and physical problems.

Alcohol problems were found to be related to *Maternal Care* and *Control* but not to paternal parenting patterns. A significant negative relationship was found between social problem solving and alcohol problems; a positive significant relationship was found between alcohol problems and the dysfunctional styles of social problem solving: *Negative Problem Orientation*, *Impulsivity/Carelessness Style*, *Avoidance Style*. Both aspects of self-esteem were significantly related to *Maternal and Paternal Care*, social problem solving and alcohol-related problems. Furthermore, *Self-Competence* was not found to be a mediator in the relationship between *Maternal Care* and alcohol problems. Neither *Self-Competence* nor *Self-Liking* were found to be mediators in the relationship of problem solving and alcohol problems.

In conclusion, the current study is the first to examine potential links between parental bonding, social problem solving, self-esteem and alcohol problems. Dysfunctional aspects of problem solving, poor maternal bonding experiences during childhood and adolescence and poor self-esteem appear to be related to alcohol problems in alcohol-dependent individuals. Self-esteem and social problem solving should therefore continue to be targeted by treatment programmes. The precise mechanisms through which self-esteem and problem solving, parental bonding and alcohol problems are connected have yet to be established.

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## Appendix A: List of Hypotheses - Mediated Relationships

### Parental Bonding and Alcohol Problems – Mediator: Self-Liking

- 3.a H<sub>0</sub>: The relationship between *Maternal Care* (PBI) and APQ *Common* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Maternal Care* (PBI) and APQ *Common* is mediated by *Self-Liking* (SLCS-R).
- 3.b H<sub>0</sub>: The relationship between *Maternal Care* (PBI) and *Audit* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Maternal Care* (PBI) and *Audit* is mediated by *Self-Liking* (SLCS-R).
- 3.c H<sub>0</sub>: The relationship between *Paternal Care* (PBI) and APQ *Common* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Paternal Care* (PBI) and APQ *Common* is mediated by *Self-Liking* (SLCS-R).
- 3.d H<sub>0</sub>: The relationship between *Paternal Care* (PBI) and *Audit* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Paternal Care* (PBI) and *Audit* is mediated by *Self-Liking* (SLCS-R).
- 3.e H<sub>0</sub>: The relationship between *Maternal Control* (PBI) and APQ *Common* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Maternal Control* (PBI) and APQ *Common* is mediated by *Self-Liking* (SLCS-R).
- 3.f H<sub>0</sub>: The relationship between *Maternal Control* (PBI) and *Audit* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Maternal Control* (PBI) and *Audit* is mediated by *Self-Liking* (SLCS-R).
- 3.g H<sub>0</sub>: The relationship between *Paternal Control* (PBI) and APQ *Common* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Paternal Control* (PBI) and APQ *Common* is mediated by *Self-Liking* (SLCS-R).
- 3.h H<sub>0</sub>: The relationship between *Paternal Control* (PBI) and *Audit* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Paternal Control* (PBI) and *Audit* is mediated by *Self-Liking* (SLCS-R).

#### **Parental Bonding and Alcohol Problems – Mediator: Self-Competence**

- 4.a H<sub>0</sub>: The relationship between *Maternal Care* (PBI) and *APQ Common* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Maternal Care* (PBI) and *APQ Common* is mediated by *Self-Competence* (SLCS-R).
- 4.b H<sub>0</sub>: The relationship between *Maternal Care* (PBI) and *Audit* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Maternal Care* (PBI) and *Audit* is mediated by *Self-Competence* (SLCS-R).
- 4.c H<sub>0</sub>: The relationship between *Paternal Care* (PBI) and *APQ Common* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Paternal Care* (PBI) and *APQ Common* is mediated by *Self-Competence* (SLCS-R).
- 4.d H<sub>0</sub>: The relationship between *Paternal Care* (PBI) and *Audit* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Paternal Care* (PBI) and *Audit* is mediated by *Self-Competence* (SLCS-R).
- 4.e H<sub>0</sub>: The relationship between *Maternal Control* (PBI) and *APQ Common* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Maternal Control* (PBI) and *APQ Common* is mediated by *Self-Competence* (SLCS-R).
- 4.f H<sub>0</sub>: The relationship between *Maternal Control* (PBI) and *Audit* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Maternal Control* (PBI) and *Audit* is mediated by *Self-Competence* (SLCS-R).
- 4.g H<sub>0</sub>: The relationship between *Paternal Control* (PBI) and *APQ Common* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Paternal Control* (PBI) and *APQ Common* is mediated by *Self-Competence* (SLCS-R).
- 4.h H<sub>0</sub>: The relationship between *Paternal Control* (PBI) and *Audit* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Paternal Control* (PBI) and *Audit* is mediated by *Self-Competence* (SLCS-R).

#### **Social Problem Solving and Alcohol Problems – Mediator: Self-Liking**

- 5.a H<sub>0</sub>: The relationship between *Social Problem Solving* (Total Score) (SPSI-R:S) and *APQ Common* is not mediated by *Self-Liking* (SLCS-R).

- H<sub>1</sub>: The relationship between *Social Problem Solving* (Total Score) (SPSI-R:S) and *APQ Common* is mediated by *Self-Liking* (SLCS-R).
- 5.b H<sub>0</sub>: The relationship between *Social Problem Solving* (Total Score) (SPSI-R:S) and *Audit* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Social Problem Solving* (Total Score) (SPSI-R:S) and *Audit* is mediated by *Self-Liking* (SLCS-R).
- 5.c H<sub>0</sub>: The relationship between *Positive Problem Orientation* (SPSI-R:S) and *APQ Common* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Positive Problem Orientation* (SPSI-R:S) and *APQ Common* is mediated by *Self-Liking* (SLCS-R).
- 5.d H<sub>0</sub>: The relationship between *Positive Problem Orientation* (SPSI-R:S) and *Audit* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Positive Problem Orientation* (SPSI-R:S) and *Audit* is mediated by *Self-Liking* (SLCS-R).
- 5.e H<sub>0</sub>: The relationship between *Rational Problem Solving* (SPSI-R:S) and *APQ Common* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Rational Problem Solving* (SPSI-R:S) and *APQ Common* is mediated by *Self-Liking* (SLCS-R).
- 5.f H<sub>0</sub>: The relationship between *Rational Problem Solving* (SPSI-R:S) and *Audit* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Rational Problem Solving* (SPSI-R:S) and *Audit* is mediated by *Self-Liking* (SLCS-R).
- 5.g H<sub>0</sub>: The relationship between *Negative Problem Orientation* (SPSI-R:S) and *APQ Common* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Negative Problem Orientation* (SPSI-R:S) and *APQ Common* is mediated by *Self-Liking* (SLCS-R).
- 5.h H<sub>0</sub>: The relationship between *Negative Problem Orientation* (SPSI-R:S) and *Audit* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Negative Problem Orientation* (SPSI-R:S) and *Audit* is mediated by *Self-Liking* (SLCS-R).
- 5.i H<sub>0</sub>: The relationship between *Impulsivity/Carelessness Style* (SPSI-R:S) and *APQ Common* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Impulsivity/Carelessness Style* (SPSI-R:S) and *APQ Common* is mediated by *Self-Liking* (SLCS-R).
- 5.j H<sub>0</sub>: The relationship between *Impulsivity/Carelessness Style* (SPSI-R:S) and *Audit* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Impulsivity/Carelessness Style* (SPSI-R:S) and *Audit* is mediated by *Self-Liking* (SLCS-R).



- 5.k H<sub>0</sub>: The relationship between *Avoidance Style* (SPSI-R:S) and *APQ Common* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Avoidance Style* (SPSI-R:S) and *APQ Common* is mediated by *Self-Liking* (SLCS-R).
- 5.l H<sub>0</sub>: The relationship between *Avoidance Style* (SPSI-R:S) and *Audit* is not mediated by *Self-Liking* (SLCS-R).  
H<sub>1</sub>: The relationship between *Avoidance Style* (SPSI-R:S) and *Audit* is mediated by *Self-Liking* (SLCS-R).

#### **Social Problem Solving and Alcohol Problems – Mediator: Self-Competence**

- 6.a H<sub>0</sub>: The relationship between *Social Problem Solving* (Total Score) (SPSI-R:S) and *APQ Common* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Social Problem Solving* (Total Score) (SPSI-R:S) and *APQ Common* is mediated by *Self-Competence* (SLCS-R).
- 6.b H<sub>0</sub>: The relationship between *Social Problem Solving* (Total Score) (SPSI-R:S) and *Audit* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Social Problem Solving* (Total Score) (SPSI-R:S) and *Audit* is mediated by *Self-Competence* (SLCS-R).
- 6.c H<sub>0</sub>: The relationship between *Positive Problem Orientation* (SPSI-R:S) and *APQ Common* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Positive Problem Orientation* (SPSI-R:S) and *APQ Common* is mediated by *Self-Competence* (SLCS-R).
- 6.d H<sub>0</sub>: The relationship between *Positive Problem Orientation* (SPSI-R:S) and *Audit* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Positive Problem Orientation* (SPSI-R:S) and *Audit* is mediated by *Self-Competence* (SLCS-R).
- 6.e H<sub>0</sub>: The relationship between *Rational Problem Solving* (SPSI-R:S) and *APQ Common* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Rational Problem Solving* (SPSI-R:S) and *APQ Common* is mediated by *Self-Competence* (SLCS-R).
- 6.f H<sub>0</sub>: The relationship between *Rational Problem Solving* (SPSI-R:S) and *Audit* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Rational Problem Solving* (SPSI-R:S) and *Audit* is mediated by *Self-Competence* (SLCS-R).
- 6.g H<sub>0</sub>: The relationship between *Negative Problem Orientation* (SPSI-R:S) and *APQ Common* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Negative Problem Orientation* (SPSI-R:S) and *APQ Common* is mediated by *Self-Competence* (SLCS-R).

- 6.h H<sub>0</sub>: The relationship between *Negative Problem Orientation* (SPSI-R:S) and *Audit* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Negative Problem Orientation* (SPSI-R:S) and *Audit* is mediated by *Self-Competence* (SLCS-R).
- 6.i H<sub>0</sub>: The relationship between *Impulsivity/Carelessness Style* (SPSI-R:S) and *APQ Common* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Impulsivity/Carelessness Style* (SPSI-R:S) and *APQ Common* is mediated by *Self-Competence* (SLCS-R).
- 6.j H<sub>0</sub>: The relationship between *Impulsivity/Carelessness Style* (SPSI-R:S) and *Audit* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Impulsivity/Carelessness Style* (SPSI-R:S) and *Audit* is mediated by *Self-Competence* (SLCS-R).
- 6.k H<sub>0</sub>: The relationship between *Avoidance Style* (SPSI-R:S) and *APQ Common* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Avoidance Style* (SPSI-R:S) and *APQ Common* is mediated by *Self-Competence* (SLCS-R).
- 6.l H<sub>0</sub>: The relationship between *Avoidance Style* (SPSI-R:S) and *Audit* is not mediated by *Self-Competence* (SLCS-R).  
H<sub>1</sub>: The relationship between *Avoidance Style* (SPSI-R:S) and *Audit* is mediated by *Self-Competence* (SLCS-R).

## **Appendix B: Materials relating to Ethical Approval**

### **B.1. Letters showing Ethical Approval**

***Fife, Forth Valley & Tayside Research Ethics Service***

**Tayside Committee on Medical Research Ethics B**

Research Ethics Office

Level 9

Ninewells Hospital & Medical School

DUNDEE

DD1 9SY

Dr Daniela Schulze  
Trainee Clinical Psychologist  
NHS Tayside  
Constitution House  
55 Constitution Road  
Dundee  
DD1 1LB

Date:	16 March 2009
Your Ref:	
Our Ref:	LR/08/S1402/64
Enquiries to:	Mrs Lorraine Reilly
Extension:	Ninewells extension 40099
Direct Line:	01382 740099
Email:	Lorraine.reilly@nhs.net

Dear Dr Schulze

<b>Full title of study:</b>	<b>An examination of the relationships between patterns of attachment, self-esteem, social problem-solving and drinking behaviour in problem drinkers</b>
<b>REC reference number:</b>	<b>08/S1402/64</b>

Thank you for your letter of 27 February 2009, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

**Confirmation of ethical opinion**

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

**Ethical review of research sites**

The favourable opinion applies to the research sites listed on the attached form.

**Conditions of the favourable opinion**

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission at NHS sites ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>.

## Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	Version	Date
Letter Confirming Student Status		22 August 2008
Letter of Support from Clinical Supervisor		23 October 2008
Clinical Trial Liability Insurance		07 August 2008
Professional Indemnity Insurance		20 August 2008
Summary C.V for Supervisor	1	24 October 2008
Questionnaire: PBI - Short Form	1	24 October 2008
Questionnaire: About you....	1	24 October 2008
Letter from Sponsor		09 October 2008
Covering Letter		27 October 2008
Protocol	1	24 October 2008
Investigator CV	1	24 October 2008
Application	5.6	24 October 2008
/ for Dr Peter Martin Rice	1	24 October 2008
/ for Kevin George Power	1	24 October 2008
Questionnaire: Previous Week's Drinking	1	24 October 2008
Questionnaire: Alcohol Use Disorders Identification Test	1	24 October 2008
Questionnaire: Alcohol Problems Questionnaire	1	24 October 2008
Questionnaire: SPSI-R:S		
Questionnaire: SLCS-R	1	24 October 2008
Questionnaire: Drinking History	1	24 October 2008
Questionnaire: Typical Drinking Week	1	24 October 2008
Response to Request for Further Information		27 February 2009
Participant Consent Form	2	27 February 2009
Participant Information Sheet	2	27 February 2009

## Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

## After ethical review

Now that you have completed the application process please visit the National Research Ethics Website after Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

The attached document "After ethical review –guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:



- Notifying substantial amendments
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email [referencegroup@nres.npsa.nhs.uk](mailto:referencegroup@nres.npsa.nhs.uk).

**08/S1402/64**

**Please quote this number on all correspondence**

Yours sincerely

**Dr Margaret A R Thomson**  
**Chair**

Email: [ethicshelpline.tayside@nhs.net](mailto:ethicshelpline.tayside@nhs.net)

Enclosures:                      After ethical review – guidance for researchers  
    Site approval form

Copy to:                              Mrs Elspeth Currie, Research Governance Manager, University of Edinburgh  
    NHS Tayside R&D office

**Tayside Committee on Medical Research Ethics B**

**LIST OF SITES WITH A FAVOURABLE ETHICAL OPINION**

*For all studies requiring site-specific assessment, this form is issued by the main REC to the Chief Investigator and sponsor with the favourable opinion letter and following subsequent notifications from site assessors. For issue 2 onwards, all sites with a favourable opinion are listed, adding the new sites approved.*

<b>REC reference number:</b>	08/S1402/64	<b>Issue number:</b>	1	<b>Date of issue:</b>	16 March 2009
<b>Chief Investigator:</b>	Dr Daniela Schulze				
<b>Full title of study:</b>	An examination of the relationships between patterns of attachment, self-esteem, social problem-solving and drinking behaviour in problem drinkers				
<p><i>This study was given a favourable ethical opinion by Tayside Committee on Medical Research Ethics B on 13 March 2009. The favourable opinion is extended to each of the sites listed below. The research may commence at each NHS site when management approval from the relevant NHS care organisation has been confirmed.</i></p>					
<b>Principal Investigator</b>	<b>Post</b>	<b>Research site</b>	<b>Site assessor</b>	<b>Date of favourable opinion for this site</b>	<b>Notes <sup>(1)</sup></b>
Dr Daniela Schulze	Trainee Clinical Psychologist	NHS Tayside	Tayside Committee on Medical Research Ethics B	16/03/2009	
<p>Approved by the Chair on behalf of the REC:</p> <p style="text-align: right;">..... (Signature of Chair/Co-ordinator)</p> <p>..... (delete as applicable)</p> <p>..... MRS. LORRAINE BILLY ..... (Name)</p>					

(1) The notes column may be used by the main REC to record the early closure or withdrawal of a site (where notified by the Chief Investigator or sponsor), the suspension of termination of the favourable opinion for an individual site, or any other relevant development. The date should be recorded.



Fife



Forth Valley



Tayside

**Fife, Forth Valley & Tayside Research Ethics Service**

**Tayside Committee on Medical Research Ethics B**

Research Ethics Office  
Level 9  
Ninewells Hospital & Medical School  
DUNDEE  
DD1 9SY

Dr Daniela Schulze  
Trainee Clinical Psychologist  
NHS Tayside  
Constitution House  
55 Constitution Road  
Dundee  
DD1 1LB

Date: 12 October 2009  
Your Ref:  
Our Ref: LR/08/S1402/64  
Enquiries to: Mrs Lorraine Reilly  
Extension: Ninewells extension 40099  
Direct Line: 01382 740099  
Email: Lorraine.reilly@nhs.net

Dear Dr Schulze

**Full title of study:** An examination of the relationships between patterns of attachment, self-esteem, social problem-solving and drinking behaviour in problem drinkers

**REC reference number:** 08/S1402/64

Thank you for your letter of 27 February 2009, requesting an extension of the timescale of the project until February 2011 as you will be on maternity leave for one year.

<b>08/S1402/64</b>	<b>Please quote this number on all correspondence</b>
--------------------	---

Yours sincerely

**Mrs Lorraine Reilly**  
**Committee Co-ordinator**

Copy to: Mrs Elspeth Currie, Research Governance Manager, University of Edinburgh  
NHS Tayside R&D office

EC/LH

25 March 2009

Dr Daniela Schulze  
Trainee Clinical psychologist  
NHS Tayside  
Constitution House  
55 Constitution Road  
DUNDEE  
DD1 1LB

Dear Dr Schulze,

**NHS TAYSIDE MANAGEMENT/GOVERNANCE APPROVAL**

**R&D Project ID: 2008PV01**

**Title: An examination of the relationships between patterns of attachment, self-esteem, social problem-solving and drinking behaviour in problem drinkers.**

**Ethics Ref: 08/S1402/64      Ethics Approval Date: 16/03/09**

**Funder: Unfunded – student project**

**Sponsor: University of Edinburgh**

**NHS Support Costs: £3,505**

The above project has been registered on the NHS Tayside R&D database, as required by the Research Governance Framework. Full ethics approval has been obtained and there are £3,505 local NHS Support Costs associated with this research project.

NHS Tayside has no objection to the project proceeding, provided all necessary approvals are in place and all amendments to the protocol, personnel involved and funding be notified to the R&D Office and all appropriate personnel.

It is important to note that all research must be carried out in compliance with the Research Governance Framework for Health & Community Care, GCP and the new EU Clinical Trials Directive (for clinical trials involving investigational medicinal products).

Kind Regards

Elizabeth Coote  
Non-Commercial  
R&D Manager

c.c.      Mrs Lorraine Reilly (Assistant Administration Manager, NHS Tayside)  
             Elspeth Currie (Research Governance Manager, University of Edinburgh)

## **An examination of the relationships between patterns of attachment, self-esteem, social problem-solving and drinking behaviour in problem drinkers**

### **PARTICIPANT INFORMATION SHEET**

We invite you to take part in a research project. Before you decide whether or not you want to participate, we need to be sure that you understand why we are doing this research and what you would be asked to do if you take part. Please read this information carefully and be sure to ask any questions that you have. You can also discuss with other people if you would like to take part or not. We will do our best to explain the study and give you any information that you might ask for. You do not have to make a decision right now.

#### **The Background to the Study**

The study is being carried out as part of a training course leading to the qualification of Doctor of Clinical Psychology (DClinPsych) (University of Edinburgh) by the main investigator, Daniela Schulze. It is supervised by Professor Kevin Power, Professor Dave Peck and Dr Peter Rice.

In this study we would like to examine what factors may be important in developing and maintaining a drinking problem. In particular, we would like to look at the effects of the following on your drinking:

- How you view your upbringing
- How highly you judge yourself
- How you deal with day-to-day problems.

#### **What does the study entail?**

As part of the study we would like to ask you to fill in several questionnaires. There will be questions about your self-esteem, problem-solving ability and about the relationship with your parents when you were younger. You will also be asked some questions about your drinking behaviour and drinking history.

The questions are mainly multiple choice questions. This means that you can choose a ready-made answer to a question from several choices. It is important that you have not consumed any alcohol since you started the inpatient programme.

#### **What will happen to the information collected in the study?**

If you are willing to take part in the study, all the information about you and the answers from the questionnaires will be confidential. This means that no names or personal information from you will be used in the report of the study. The information from you will be looked at together with responses from other people taking part to see whether there are any patterns in people's upbringing and their behaviour and whether these patterns are specific to drinking problems.



### **What are the possible discomforts or risks?**

Some of the questions might remind you of difficult issues in your life. You might not even be aware that you have these difficulties. If this happens and you feel you are having difficulty coping with them, you can speak to the psychologist or the nurse who is currently treating you.

### **What are your rights?**

Participation in the study is voluntary. You can refuse to take part or withdraw from the study at any time without giving a reason. Whether you take part or not will not affect how well you are looked after by the staff in the hospital or in the future within the community.

The Tayside Committee on Medical Research Ethics, which has responsibility for scrutinising all proposals for medical research on humans in Tayside, has examined the proposal and has raised no objections from the point of view of medical ethics. It is a requirement that your records in this research, together with any relevant medical records, be made available for scrutiny by monitors from University of Edinburgh and NHS Tayside, whose role is to check that research is properly conducted and the interests of those taking part are adequately protected.

If you believe that you have been harmed in any way by taking part in this study, you have the right to pursue a complaint and seek any resulting compensation through the University of Edinburgh who are acting as the research sponsor. Details about this are available from the research team.

If you are willing to take part in this study please complete the consent form on the next page. This consent form will be kept separate from your questionnaires and any information about you to protect your confidentiality. If you wish a copy of the overall results from the study you can get these from myself at the number below. The study will be completed by February 2011.

If you have any difficulties or further questions please get in touch:

Daniela Schulze on telephone number 01382 424 544

Dr Peter Rice on telephone number 01674 830 361

**Thank you for reading the Information Sheet!**

### B.3. Consent Form

Centre Number: n/a  
Study number: 08/S1402/64  
Patient Identification Number for this trial: n/a

## CONSENT FORM

Title of Project:

**An examination of the relationships between patterns of attachment, self-esteem, social problem-solving and drinking behaviour in problem drinkers**



Name of Researcher: Dr Daniela Schulze

Please initial box

1. I confirm that I have read and understood the information sheet dated 27 February 2009 (version 2) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without any medical care or legal rights being affected.
3. I understand that relevant sections of my medical notes and data collected during the study may be looked at by individuals from the University of Edinburgh or from NHS Tayside, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.
4. I agree to my GP being informed of my participation in the study.
5. I agree to take part in the above study.


\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name of person taking consent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

When complete, 1 for participant, 1 for researcher site file; 1 (original) to be kept in medical notes

## Appendix C: Demographic Information

Table C.1. Summary of Participants' Drinking History

	N	Minimum	Maximum	Mean	SD
Frequency of drinking per week (in days) (TLFB)	89	2	7	6.70	0.98
Quantity of alcohol consumed per week (in units) (TLFB)	88	39	623	208.75	117.04
Quantity of alcohol consumed per drinking occasion (in units)	89	6	83	28.98	16.23
Age when consumed first alcoholic drink (in years)	89	5	31	14.93	4.14
Age when first intoxicated (in years)	89	5	31	15.49	4.30
Age when started drinking regularly (in years)	89	10	40	19.75	7.04
Age when first started consuming the amount consumed now (in years)	89	14	59	31.52	10.27
Age when first started noticing problems in relation to alcohol consumption (in years)	89	11	59	31.41	9.83

TLFB – Timeline Followback Method

## **Appendix D: Questionnaires**

### **D.1. PBI**

### Mother

This questionnaire lists various attitudes and behaviors of parents. As you remember your MOTHER (or the individual who you regarded in that role, e.g. grandmother, stepmother, aunt) in your first 16 years would you place a tick in the most appropriate box next to each question.

	Strongly agree	Agree	Disagree	Strongly disagree
1. She did not talk with me very much				
2. She was affectionate to me				
3. She appeared to understand my problems and worries				
4. She did not help me as much as I needed				
5. She did not understand what I needed or wanted				
6. She liked me to make my own decisions				
7. She let me decide things for myself				
8. She tried to control everything I did				
9. She tended to baby me				
10. She was overprotective				

### Father

This questionnaire lists various attitudes and behaviors of parents. As you remember your FATHER (or the individual who you regarded in that role, e.g. grandfather, step-father, uncle) in your first 16 years would you place a tick in the most appropriate box next to each question.

	Strongly agree	Agree	Disagree	Strongly disagree
1. He did not talk with me very much				
2. He was affectionate to me				
3. He appeared to understand my problems and worries				
4. He did not help me as much as I needed				
5. He did not understand what I needed or wanted				
6. He liked me to make my own decisions				
7. He let me decide things for myself				
8. He tried to control everything I did				
9. He tended to baby me				
10. He was overprotective				



## D.2. SPSI-R:S Response Sheet for John Smith (taken from SPSI-R:S Manual

[D'Zurilla, Nezu, & Maydeu-Olivares, 2002])

SPSI-R:S

Thomas J. D'Zurilla, Ph.D., Arthur M. Nezu, Ph.D., & Albert Maydeu-Olivares, Ph.D.

Name: _____	Age: <u>28</u>	Gender: <u>M</u> <input type="radio"/> F <input type="radio"/> (Circle one)
Date of Birth: ____/____/____ mm dd yyyy	Today's Date: ____/____/____ mm dd yyyy	

**Instructions:** Below are some ways that you might think, feel, and act when faced with problems in everyday living. We are not talking about the ordinary hassles and pressures that you handle successfully every day. In this questionnaire, a problem is something important in your life that bothers you a lot, but you don't immediately know how to make it better or stop it from bothering you so much. The problem could be something about yourself (such as your thoughts, feelings, behavior, health, or appearance), your relationships with other people (such as your family, friends, teachers, or boss), or your environment and the things you own (such as your house, car, property, or money). Please read each statement carefully and choose one of the numbers below that best shows how much the statement is true of you. See yourself as you usually think, feel, and act when you are faced with important problems in your life these days. Circle the number that is the most true of you. Do not erase if you want to change an answer, instead put an "X" through the answer you wish to change. Try to answer all of the questions.

	Not at All True of Me	Slightly True of Me	Moderately True of Me	Very True of Me	Extremely True of Me
	0	1	2	3	4
1. I feel threatened and afraid when I have an important problem to solve.	0	1	2	<u>3</u>	4
2. When making decisions, I do not evaluate all my options carefully enough.	0	1	<u>2</u>	3	4
3. I feel nervous and unsure of myself when I have an important decision to make.	0	1	2	<u>3</u>	4
4. When my first efforts to solve a problem fail, I know if I persist and do not give up too easily, I will be able to eventually find a good solution.	0	1	2	<u>3</u>	4
5. When I have a problem, I try to see it as a challenge, or opportunity to benefit in some positive way from having the problem.	0	1	<u>2</u>	3	4
6. I wait to see if a problem will resolve itself first, before trying to solve it myself.	0	1	2	<u>3</u>	4
7. When my first efforts to solve a problem fail, I get very frustrated.	0	<u>1</u>	2	3	4
8. When I am faced with a difficult problem, I doubt that I will be able to solve it on my own no matter how hard I try.	0	1	<u>2</u>	3	4
9. Whenever I have a problem, I believe that it can be solved.	0	1	2	3	<u>4</u>
10. I go out of my way to avoid having to deal with problems in my life.	0	1	<u>2</u>	3	4
11. Difficult problems make me very upset.	0	1	<u>2</u>	3	4
12. When I have a decision to make, I try to predict the positive and negative consequences of each option.	0	1	2	3	<u>4</u>
13. When problems occur in my life, I like to deal with them as soon as possible.	0	1	2	<u>3</u>	4
14. When I am trying to solve a problem, I go with the first good idea that comes to mind.	0	1	2	3	<u>4</u>
15. When I am faced with a difficult problem, I believe that I will be able to solve it on my own if I try hard enough.	0	1	2	<u>3</u>	4
16. When I have a problem to solve, one of the first things I do is get as many facts about the problem as possible.	0	1	2	<u>3</u>	4
17. When a problem occurs in my life, I put off trying to solve it for as long as possible.	0	1	2	<u>3</u>	4
18. I spend more time avoiding my problems than solving them.	0	1	<u>2</u>	3	4
19. Before I try to solve a problem, I set a specific goal so that I know exactly what I want to accomplish.	0	1	2	3	<u>4</u>
20. When I have a decision to make, I do not take the time to consider the pros and cons of each option.	0	1	<u>2</u>	3	4
21. After carrying out a solution to a problem, I try to evaluate as carefully as possible how much the situation has changed for the better.	0	1	<u>2</u>	3	4
22. I put off solving problems until it is too late to do anything about them.	0	1	2	<u>3</u>	4
23. When I am trying to solve a problem, I think of as many options as possible until I cannot come up with any more ideas.	0	1	2	<u>3</u>	4
24. When making decisions, I go with my "gut feeling" without thinking too much about the consequences of each option.	0	1	<u>2</u>	3	4
25. I am too impulsive when it comes to making decisions.	0	1	2	<u>3</u>	4



Copyright © 1996, 2002 Multi-Health Systems Inc. All rights reserved. In the U.S.A., P.O. Box 950, North Tonawanda NY, 14120-0950, (800) 456-3003. In Canada, 3770 Victoria Park Ave., Toronto, ON M2H 3M6, (800) 268-6011. Internationally, +1-416-492-2627. Fax, +1-416-492-3343 or (888) 540-4484.

Printed in Canada

D.3. SLCS-R  
**Self-Liking/Self-Competence Scale-Revised (SLCS-R)**

The questions below focus on your general thoughts and feelings about yourself. Please indicate how much you agree or disagree with each of these statements, using the scale below. Please be as honest and accurate as possible. Do not skip any questions. Thank you.

1-----2-----3-----4-----5  
Strongly                      Neither agree                      strongly  
disagree                      nor disagree                      agree

---

1. I tend to devalue myself. \_\_\_\_
2. I am highly effective at the things I do. \_\_\_\_
3. I am very comfortable with myself. \_\_\_\_
4. I am almost always able to accomplish what I try for. \_\_\_\_
5. I am secure in my sense of self-worth. \_\_\_\_
6. It is sometimes unpleasant for me to think about myself. \_\_\_\_
7. I have a negative attitude toward myself. \_\_\_\_
8. At times, I find it difficult to achieve the things that are important to me. \_\_\_\_
9. I feel great about who I am. \_\_\_\_
10. I sometimes deal poorly with challenges. \_\_\_\_
11. I never doubt my personal worth. \_\_\_\_
12. I perform very well at many things. \_\_\_\_
13. I sometimes fail to fulfill my goals. \_\_\_\_
14. I am very talented. \_\_\_\_
15. I do not have enough respect for myself. \_\_\_\_
16. I wish I were more skillful in my activities. \_\_\_\_

2

D.4. Timeline Followback Drinking Diary and Drinking History

## PREVIOUS WEEK'S DRINKING

Please indicate in the table below how much alcohol you consumed on each day of the **previous week** (before coming to hospital) by stating **where** you consumed the drink, the **type of the drink** (e.g. lager, wine, vodka), and **how much of that particular drink** you consumed (e.g. 1 pint, 1 glass, 1 pub measure).



When?	Where consumed?	What type of drink?	How many?	What size of drink?
e.g. Sunday	At home	Red wine	1	Glass
e.g. Saturday	Pub	Budweiser	2	Bottle
SUNDAY				
SATURDAY				
FRIDAY				
THURSDAY				
WEDNESDAY				
TUESDAY				
MONDAY				

Is that a typical/usual drinking week? YES / NO

# TYPICAL DRINKING WEEK



Please indicate in the table below how much alcohol you would consume on each day of a **typical week** by stating **where** you consumed the drink, the **type of the drink** (e.g. lager, wine, vodka), and **how much of that particular drink** you would consume (e.g. 1 pint, 1 glass, 1 pub measure).

When?	Where consumed?	What type of drink?	How many?	What size of drink?
e.g. Monday	At home	Red wine	1	Glass
e.g. Tuesday	Pub	Budweiser	2	Bottle
MONDAY				
TUESDAY				
WEDNESDAY				
THURSDAY				
FRIDAY				
SATURDAY				
SUNDAY				

## DRINKING HISTORY

Presented below are several questions about your drinking.

**Please remember that all the information given in this questionnaire will be treated with the strictest confidence and will be used for scientific purposes only.**



1. What age were you when you consumed your first alcoholic drink? \_\_\_\_\_
  2. What age were you when you first got drunk? \_\_\_\_\_
  3. At what age did you start to drink regularly? \_\_\_\_\_
  4. At what age did you start to drink the amount of alcohol that you drink now? \_\_\_\_\_
  5. At what age did alcohol become associated with problems? \_\_\_\_\_
  6. How much alcohol do you generally drink on an average drinking occasion (please also state what kind of drink and the size of drink)? \_\_\_\_\_
  7. In general, how often do you drink alcohol (times per week or month)? \_\_\_\_\_/week
  8. Do you have any relatives who previously have been or presently are problem drinkers? Yes / No
- If yes, who? \_\_\_\_\_

THANK YOU FOR YOUR HELP!



**D.5. Audit**  
**Alcohol Use Disorders Identification Test (AUDIT)**

Please circle the answer that is correct for you.



- 1. How often do you have a drink containing alcohol?**
  - [0] Never
  - [1] Monthly or less
  - [2] 2-4 times a month
  - [3] 2-3 times a week
  - [4] 4 or more times a week
- 2. How many standard drinks containing alcohol do you have on a typical day when drinking?**
  - [0] 1 or 2
  - [1] 3 or 4
  - [2] 5 or 6
  - [3] 7 to 9
  - [4] 10 or more
- 3. How often do you have six or more drinks on one occasion?**
  - [0] Never
  - [1] Less than monthly
  - [2] Monthly
  - [3] Weekly
  - [4] Daily or almost daily
- 4. During the past year, how often have you found that you were not able to stop drinking once you had started?**
  - [0] Never
  - [1] Less than monthly
  - [2] Monthly
  - [3] Weekly
  - [4] Daily or almost daily
- 5. During the past year, how often have you failed to do what was normally expected of you because of drinking?**
  - [0] Never
  - [1] Less than monthly
  - [2] Monthly
  - [3] Weekly
  - [4] Daily or almost daily
- 6. During the past year, how often have you needed a drink in the morning to get yourself going after a heavy drinking session?**
  - [0] Never
  - [1] Less than monthly
  - [2] Monthly
  - [3] Weekly
  - [4] Daily or almost daily
- 7. During the past year, how often have you had a feeling of guilt or remorse after drinking?**
  - [0] Never
  - [1] Less than monthly
  - [2] Monthly
  - [3] Weekly
  - [4] Daily or almost daily
- 8. During the past year, have you been unable to remember what happened the night before because you had been drinking?**
  - [0] Never
  - [1] Less than monthly
  - [2] Monthly
  - [3] Weekly
  - [4] Daily or almost daily
- 9. Have you or someone else been injured as a result of your drinking?**
  - [0] No
  - [2] Yes, but not in the past year
  - [4] Yes, during the past year
- 10. Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested you cut down?**
  - [0] No
  - [2] Yes, but not in the past year
  - [4] Yes, during the past year

## D.6. APQ Alcohol Problems Questionnaire (APQ)

All questions refer to the last 6 months. Please circle the answer that is correct for you.

### Common Items

1. Have you tended to drink more on your own than you used to?	Yes/ No
2. Have you worried about meeting your friends again the day after a drinking session?	Yes/ No
3. Have you spent more time with drinking friends than other kinds of friends?	Yes/ No
4. Have your friends criticized you for drinking too much?	Yes/ No
5. Have you had any debts?	Yes/ No
6. Have you pawned any of your belongings to buy alcohol?	Yes/ No
7. Do you find yourself making excuses about money?	Yes/ No
8. Have you been caught out lying about money?	Yes/ No
9. Have you been in trouble with the police due to your drinking?	Yes/ No
10. Have you lost your driving license for drinking and driving?	Yes/ No
11. Have you been in prison?	Yes/ No
12. Have you been physically sick after drinking?	Yes/ No
13. Have you had diarrhea after a drinking session?	Yes/ No
14. Have you had pains in your stomach after a drinking session?	Yes/ No
15. Have you had 'pins and needles' in your fingers or toes?	Yes/ No
16. Have you had any accidents requiring hospital treatment after drinking?	Yes/ No
17. Have you lost any weight?	Yes/ No
18. Have you been neglecting yourself physically?	Yes/ No
19. Have you failed to wash for several days at a time?	Yes/ No
20. Have you felt depressed for more than a week?	Yes/ No
21. Have you felt so depressed that you felt like doing away with yourself?	Yes/ No
22. Have you given up any hobbies you previously enjoyed due to your drinking?	Yes/ No
23. Have you found it hard to get enjoyment from your usual interests?	Yes/ No

### Marital Items

24. Has your spouse complained about your drinking?	Yes/ No
25. Has your spouse tried to stop you from having a drink?	Yes/ No
26. Has he/she refused to talk to you because you have been drinking?	Yes/ No
27. Has he/she threatened to leave you because of your drinking?	Yes/ No
28. Has he/she had to put you to bed after you have been drinking?	Yes/ No
29. Have you shouted at him/her after you have been drinking?	Yes/ No
30. Have you injured him/her after you had been drinking?	Yes/ No
31. Have you been legally separated from your spouse?	Yes/ No
32. Has he/she refused to have sex with you because of your drinking?	Yes/ No

### Children Items

33. Have your children criticized your drinking?	Yes/ No
34. Have you had rows with your children about your drinking?	Yes/ No
35. Do your children tend to avoid you when you have been drinking?	Yes/ No
36. Have your children tried to stop you from having a drink?	Yes/ No

### Work Items

37. Have you found your work less interesting than you used to?	Yes/ No
38. Have you been unable to arrive on time for work due to your drinking?	Yes/ No
39. Have you missed a whole day after a drinking session?	Yes/ No
40. Have you been less able to do your job because of your drinking?	Yes/ No
41. Has anyone at work complained about you being late or absent?	Yes/ No
42. Have you had any formal warnings from your employers?	Yes/ No
43. Have you been suspended or dismissed from work?	Yes/ No
44. Have you had any accidents at work due to your drinking?	Yes/ No

#### D.7. Demographic Proforma

THIS BOOKLET SHOULD CONTAIN COPIES OF THE FOLLOWING:



1. Parental Bonding Instrument (PBI) (short form)
2. Self Liking/Self-Competence Scale (SLCS-R)
3. Social Problem Solving Inventory- Revised (SPSI-R:S)
4. Alcohol Problems Questionnaire (APQ)
5. Alcohol Use Disorder Identification Test (AUDIT)
6. Drinking Diary and Drinking History

### **ABOUT YOU....**

#### **Gender**

- ☐ Female ☐ Male

#### **Marital Status: Are you...?**

- ☐ Single (never married)  
☐ Married (first marriage)  
☐ Re-married  
☐ Living with a partner (but not married)  
☐ Separated (but still legally married)  
☐ Divorced  
☐ Widowed

#### **Do you live...?**

- ☐ alone  
☐ with a partner  
☐ with family  
☐ with friends  
☐ hostel

#### **Ethnic Group**

- ☐ White British  
☐ White Irish  
☐ Any other white  
☐ White & Black Caribbean  
☐ White & Black Africa  
☐ White & Asian  
☐ Any other mixed background  
☐ Indian  
☐ Pakistani  
☐ Bangladeshi  
☐ Any other Asian background  
☐ Caribbean  
☐ African  
☐ Any other black background  
☐ Chinese  
☐ Any other ethnic group (please state)  
☐ Not stated

## Education

How many years did you spend in education?

---

What is your highest qualification?

---

## Occupation

What is your occupation?

---

Are you currently....

- ☐ Employed
- ☐ Unemployed
- ☐ Unable to work for health reasons and receiving benefits
- ☐ Student
- ☐ Other (please specify)

---

## Children

Do you have any children?

Yes / No

If yes, how many?

---

How old are they?

---

Do your children live with you?

Yes / No

If your children don't live with you, do you have access?

Yes / No

Appendix E: Data Distribution of *Frequency* and APQ Domains

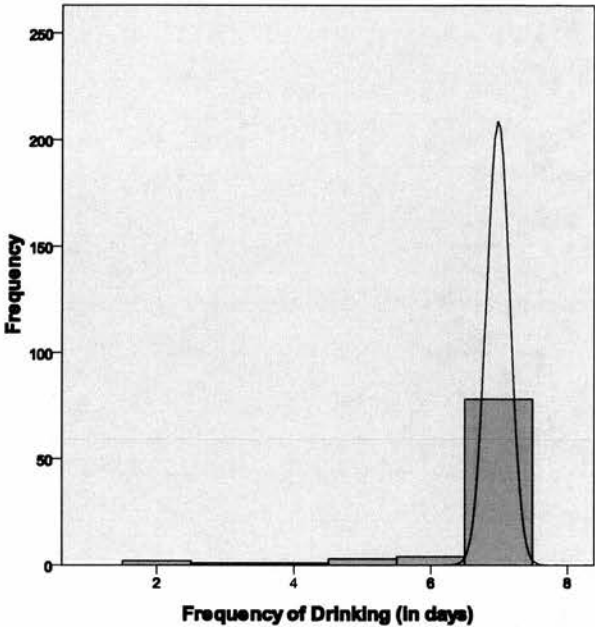


Figure E11. Histogramme for Frequency of Drinking per Week ( $M=6.70$ ,  $SD=0.97$ ,  $N=89$ )

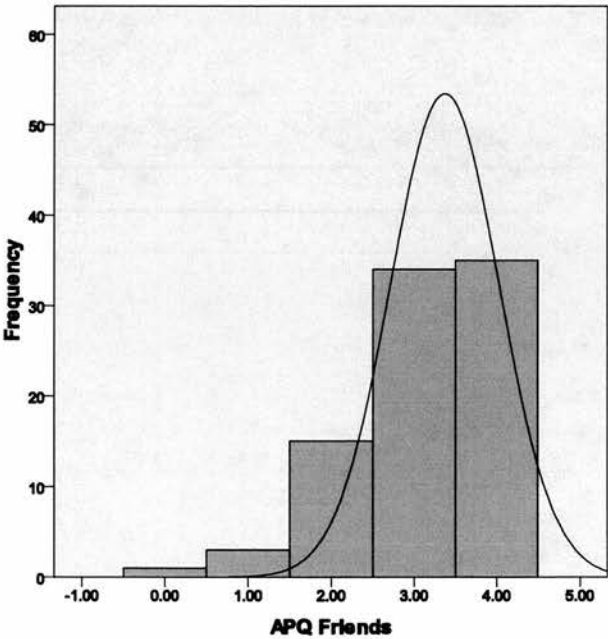


Figure E22. Histogramme for APQ *Friends* (4 items) ( $M=3.13$ ,  $SD=0.90$ ,  $N=88$ )



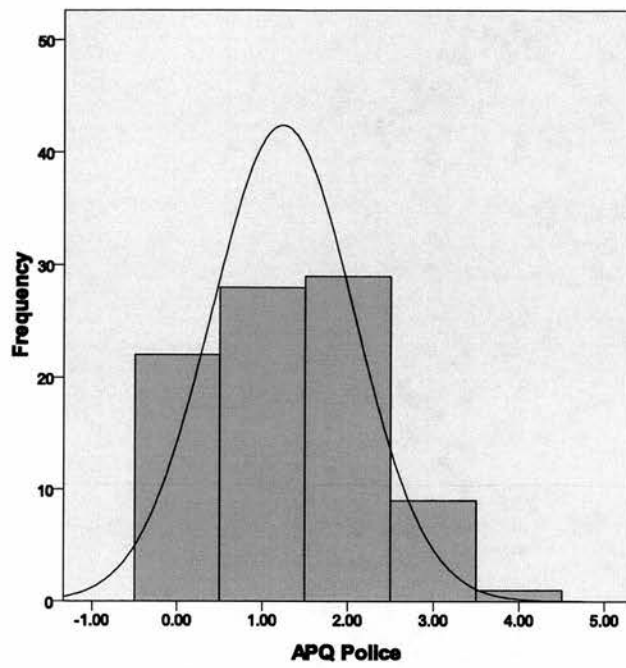


Figure E33. Histogramme for APQ *Police* (3 items) ( $M=1.31$ ,  $SD=1.00$ ,  $N=89$ )

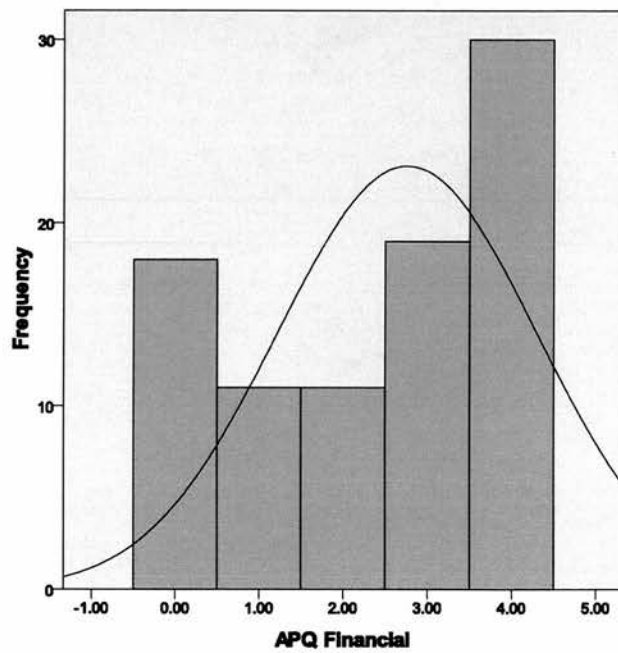


Figure E44. Histogramme for APQ *Financial* (4 items) ( $M=2.36$ ,  $SD=1.55$ ,  $N=89$ )

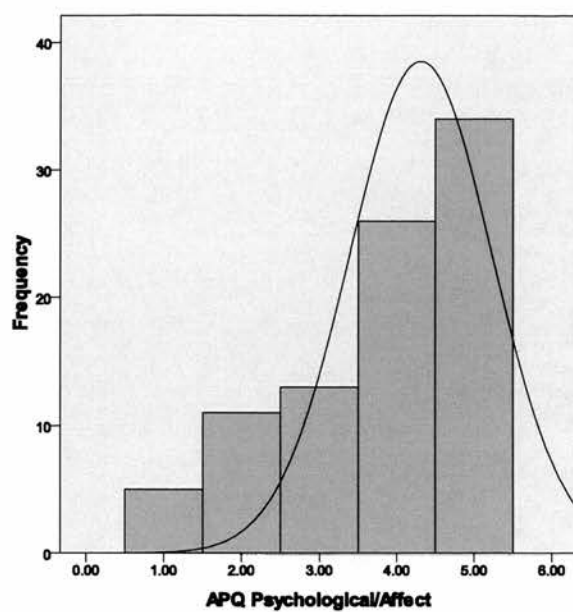


Figure E55. Histogramme for APQ *Psychological/Affect* (5 items) ( $M=3.82$ ,  $SD=1.23$ ,  $N=89$ )

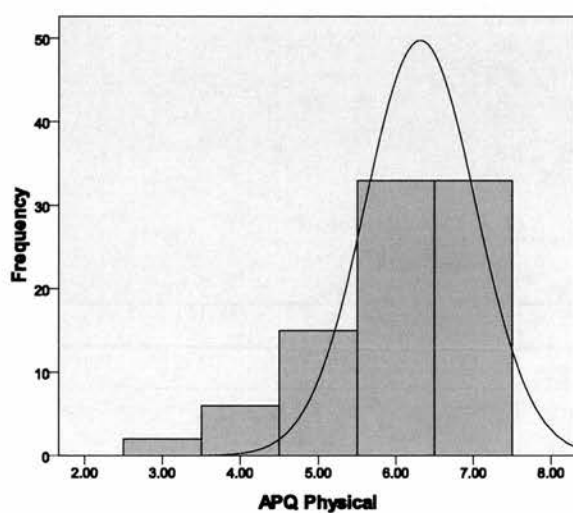


Figure E66. Histogramme for APQ *Physical* (7 items) ( $M=6.00$ ,  $SD=1.01$ ,  $N=89$ )

# Appendix F: Comparison of Descriptive Data with Normative Data

Table F1. Summary of Descriptive Statistics PBI and Normative Data for the PBI

	Current alcohol-dependent sample N=85		Female anorexic sample * N=43		Female non-clinical student sample* N=76	
<i>PBI subscales</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
<i>Maternal Care</i>	9.57	3.99	9.40	4.00	11.07	3.28
<i>Maternal Control</i>	5.83	3.00	6.02	3.47	5.26	2.82
<i>Paternal Care</i>	7.60	4.18	7.28	4.11	9.17	4.23
<i>Paternal Control</i>	4.94	3.29	5.35	3.68	5.08	2.70

\*Data from Swanson et al. (2010)

Table F2. Post hoc Comparisons between Current Alcohol-dependent Group and Anorexic Inpatients and Undergraduate Students on PBI

	Current alcohol-dependent sample vs Female anorexic sample*		Current alcohol-dependent sample vs Female student sample *	
<i>PBI Subscales</i>	<i>Tukey-Kramer q</i>	<i>p</i>	<i>Tukey-Kramer q</i>	<i>p</i>
<i>Maternal Care</i>	0.34	>0.05	3.59	<0.05
<i>Paternal Care</i>	0.58	>0.05	3.36	<0.05

\*Data from Swanson et al. (2010) – significant differences were found for the dimensions of Maternal and Paternal Care between the anorexic and non-clinical groups ( $p<0.05$ )

Table F3. Summary of Descriptive Statistics SPSI-R:S and Normative Data for the SPSI-R:S

	Current alcohol-dependent sample N=84		Male prisoners* N=68		Male undergraduate students+ N=102	
<i>SPSI-R:S Subscales</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
<i>Social Problem Solving (Total Score)</i>	8.49	3.44	11.86	3.44	11.87	2.42
<i>Positive Problem Orientation</i>	9.33	5.06	12.62	4.09	12.55	3.86
<i>Negative Problem Orientation</i>	12.70	5.43	7.10	4.63	7.23	3.46
<i>Rational Problem Solving</i>	9.51	5.07	10.00	4.39	11.82	3.98
<i>Impulsivity/Carelessness Style</i>	11.36	4.94	9.15	4.73	6.46	3.70
<i>Avoidance Style</i>	12.31	5.54	7.07	4.94	6.35	3.85

\*Data from McMurran & Christopher (2009), +Data from Bell & D'Zurilla (2009)

Table F4. Post hoc Comparisons between Current Alcohol-dependent Group and Male Prisoners and Male Students on Social Problem Solving (SPSI-R:S)

	Current alcohol-dependent sample vs Male Prisoners*		Current alcohol-dependent sample vs Male undergraduate students+	
<i>SPSI-R:S Subscales</i>	<i>Tukey-Kramer q</i>	<i>p</i>	<i>Tukey-Kramer q</i>	<i>p</i>
<i>Social Problem Solving (Total Score)</i>	9.52	<0.001	10.57	<0.001
<i>Positive Problem Orientation</i>	6.56	<0.001	7.10	<0.001
<i>Negative Problem Orientation</i>	10.94	<0.001	11.87	<0.001
<i>Rational Problem Solving</i>	0.95	>0.05	4.96	<0.01
<i>Impulsivity/Carelessness Style</i>	4.33	<0.01	10.64	<0.001
<i>Avoidance Style</i>	9.55	<0.001	12.03	<0.001

\*Data from McMurran & Christopher (2009), +Data from Bell & D'Zurilla (2009)

Table F5. Summary of Descriptive Statistics SLCS-R and Normative Data for the SLCS-R

	Current alcohol-dependent sample N=90		Female anorexic sample * N=27		Female non-clinical student sample* N=62	
<i>SCSL-R Subscales</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
<i>Self-Competence</i>	16.24	7.30	15.77	7.17	25.20	5.54
<i>Self-Liking</i>	18.52	6.50	18.77	5.80	25.19	3.95

\*Data from Paterson et al. (2007)

Table F6. Post hoc Comparisons between Current Alcohol-dependent Group and Anorexic Inpatients and Undergraduate Students on SLCS-R

	Current alcohol-dependent sample vs Female anorexic sample*		Current alcohol-dependent sample vs Female student sample *	
<i>SLCS-R Subscales</i>	<i>Tukey-Kramer q</i>	<i>p</i>	<i>Tukey-Kramer q</i>	<i>p</i>
<i>Self-Competence</i>	0.45	>0.05	11.42	<0.001
<i>Self-Liking</i>	0.29	>0.05	10.14	<0.001

\*Data from Paterson et al. (2007) – significant differences were found for the dimensions of Self-Liking and Self-Competence between the anorexic and non-clinical groups ( $p<0.01$ )

Table F7. Summary of Descriptive Statistics APQ and Normative Data for the APQ

	Current alcohol-dependent sample N=88		Inpatients and outpatients from UK alcohol treatment centres * N=95		<i>t-test</i>	
<i>APQ Domains</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>t</i>	<i>p</i>
<i>APQ Common</i>	16.68	3.49	15.19	4.55	2.50	0.013
<i>Friends Domain</i>	3.13	0.89	3.03	0.99	0.72	0.472
<i>Physical Domain</i>	6.00	1.01	5.10	1.87	4.01	< 0.001
<i>Affect Domain</i>	3.82	1.23	3.46	1.44	1.81	0.072
<i>Finances Domain</i>	2.36	1.55	2.37	1.60	0.04	0.966
<i>Police Domain</i>	1.31	1.00	1.15	1.03	1.07	0.288

\*Data from Williams & Drummond (1994)



Table F8. Summary of Descriptive Statistics Alcohol Consumption and Normative Data for Alcohol Consumption

	Current alcohol-dependent sample N=88		Regular drinking, non-clinical sample* N=80		Comparison between alcohol dependent and non-clinical groups	
	Mean	SD	Mean	SD	t-values	p-values
<i>Frequency of drinking per week (in days)</i>	6.37	1.39	2.14	1.09	-21.75	<0.001
<i>Quantity of alcohol consumed per week (in units) (TLFB)</i>	208.75	117.04	29.38	21.70	-8.69	<0.001
<i>Quantity of alcohol consumed per drinking occasion (in units)</i>	28.98	16.23	13.41	7.69	-14.12	<0.001
<i>Age when consumed first alcoholic drink (in years)</i>	14.93	4.14	13.14	2.63	-3.28	0.001
<i>Age when first "got drunk" (in years)</i>	15.49	4.31	14.69	2.52	-1.49	0.138

\*Data from Finnigan, Schulze, Smallwood & Helander (2005)

TLFB – Timeline Followback Method